

## **APPENDIX I**

Water Supply Study for the proposed  
La Quinta General Plan Update 2010

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June 21, 2011

# **WATER SUPPLY STUDY**

*for the proposed:*

## **LA QUINTA GENERAL PLAN UPDATE 2010**

*prepared for:*

**City of La Quinta  
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**June 21, 2011**

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## **LIST OF ACRONYMS**

AC-FT	Acre-Feet
AC-FT/YR	Acre-Feet per Year
AWWA	American Water Works Association
BAU	Business As Usual
CEQA	California Environmental Quality Act
CCF	Centum Cubic Feet
CFS	Cubic Feet per Second
CVAG	Coachella Valley Association of Governments
CVSC	Coachella Valley Stormwater Channel
CVWD	Coachella Valley Water District
CVWMP	Coachella Valley Water Management Plan
DWA	Desert Water Agency
DWR	California Department of Water Resources
ID-1	CVWD's Improvement District No. 1
ID-11	CVWD's Improvement District No. 11
IID	Imperial Irrigation District
LQ	La Quinta
MGD	Million Gallons per Day
MWD	Metropolitan Water District of Southern California
QSA	Quantification Settlement Agreement
SDCWA	San Diego County Water Authority
SOI	Sphere of Influence
SWSC	Supplemental Water Supply Charge
SWP	State Water Project
UWMP	Urban Water Management Plan
WSS	Water Supply Study
WRP	Water Reclamation Plant

## **1.0 EXECUTIVE SUMMARY**

This Water Supply Study has been prepared to inform the proposed 2010 General Plan Update for the City of La Quinta. For analysis purposes, the Project is defined as all proposed development set forth in the La Quinta 2010 General Plan Update. The General Plan Update provides a variety of land uses, such as residential, commercial, and open space.

This Study examines past, current, and future conditions and reliability of SWP supplies, Colorado River water, groundwater, and other water supply resources, and evaluates water supply availability through 2035. The analysis concludes that there are and will continue to be sufficient water supplies available to meet projected demand for all existing and planned future development including new development proposed in the General Plan Update from 2010 through 2035. Although water supplies are available, infrastructure will need to be expanded over the next several years in order to provide a reliable and efficient water treatment and delivery system throughout the Planning Area.

Sufficient infrastructure and services are currently in place or planned for development within La Quinta City limits. Infrastructure and services will need to be installed and expanded to serve the Sphere of Influence. Development within the Sphere of Influence will be phased to assure that water demands generated are within the service range of the system. The forthcoming Master Plan of Development for the Sphere of Influence will assure that water demands increase incrementally in accordance with available supplies.

A comprehensive description of the methodology used to conduct water demand calculations can be found in Appendix A. The Project-specific model estimates that, at buildout, water demands generated by the City of La Quinta will increase to 37,783 acre-feet per year, and 16,684 acre-feet per year for the Sphere of Influence. Water demand projections are based on the maximum water allowance requirements set forth in CVWD Landscape Ordinance 1302.1, AWWA potable demand estimates, and new state requirements limiting the per capita water demand.

Water resources in the Coachella Valley are managed regionally through several participating water purveyors. The Coachella Valley Water District coordinates and jointly plans for water resources management with purveyors that utilize shared resources. The 2010 CVWMP is the latest regional water planning document that addresses long term water management planning for all water resources. The CVWD 2010 Draft UWMP focuses on the urban water supply, including the water demands generated by the City of La Quinta and the Sphere of Influence, and considers the reliability of water supplies during drought conditions. Both planning documents project future water demands that will be generated by new development and the proposed population growth.

The public water supplier, the Coachella Valley Water District (CVWD), uses surface, groundwater, imported Colorado River water, recycled water, and various other water supplies to meet water demands throughout its service area. According to the 2010 CVWMP and the UWMP, the projected water supplies are sufficient to meet the water demands generated by existing and planned future development through 2035 under normal, single, and multiple dry year conditions, including water demands generated by manufacturing, industrial, and agricultural water users.

## **2.0 INTRODUCTION**

This Water Supply Study quantifies the total potential water demand that is projected to be generated from implementation of the proposed General Plan Update. The entire City of La Quinta and the Sphere of Influence are served by the Coachella Valley Water District (CVWD or the District). Water supplies in the District's service area are primarily from imported Colorado River water, including SWP Exchange water and groundwater, which is extracted locally from the Whitewater River Subbasin. Deliveries of potable water throughout a majority of the District's service area are provided via a system of domestic water lines, wells, and elevated storage facilities. Irrigation water is provided via the Coachella Branch of the All American Canal and a series of pipes, reservoirs, and laterals that provide water for agricultural uses throughout the service area.

### City Limits

The City of La Quinta has an established water delivery system that is maintained and operated by the CVWD. Currently in the City of La Quinta, CVWD has the following domestic water facilities: 21 active wells; 6 booster stations; and 10 existing reservoirs, with capacities ranging from 250,000 to 12 million gallons and a total storage capacity of 44.6 million gallons. Domestic water distribution and transmission lines range from 4 inches to 36 inches in diameter.

### Sphere of Influence

The Sphere of Influence for the City of La Quinta is located in an unincorporated area of Riverside County, California and encompasses a total of 8,101.4 acres. Currently only 928.4 acres within the Sphere of Influence are developed, with the remaining 7,173 acres vacant. Development proposed as part of the General Plan Update will expand residential and commercial land uses in the Sphere of Influence and result in a substantial increase in water demand compared to the existing condition.

A Master Plan of Development for the City's Sphere of Influence will be developed by the City of La Quinta that regulates growth and expansion within the Sphere and assures consistency with Vista Santa Rosa Land Use Concept.

### **2.0.1 PURPOSE OF DOCUMENT**

The La Quinta General Plan Update is subject to the California Environmental Quality Act process (CEQA). As the lead agency under CEQA, the City of La Quinta has requested that a Water Supply Study be prepared to analyze the availability and reliability of water resources. The Coachella Valley Water District (CVWD), as the Public Water Supplier (PWS), has recently updated the Urban Water Management Plan. The Draft 2010 UWMP has been prepared pursuant to Senate Bill 610 requirements and assesses the sufficiency of the water supplies relative to projected demands under normal, single, and multiple dry year conditions through 2035. This Water Supply Study is intended to evaluate the water supply and demand conditions for the City of La Quinta's proposed General Plan Update relative to the UWMP.

This Study has been prepared to inform the City of projected water demands, identify water supplies, and assess water supply reliability.

## **2.1 PROJECT DESCRIPTION**

The Planning Area for the City of La Quinta General Plan Update encompasses approximately 48.3 square miles situated in the south central portion of the Coachella Valley, in central Riverside County, California. The Planning Area is generally bounded on the north by lands south of Hovley Lane East, on the south by Avenue 64, on the west and southwest by the Santa Rosa Mountains, and on the east by Harrison Street. (see Exhibit 1, Location Map)

The General Plan Update Planning Area is comprised of 35.7± square miles within the City's corporate limits, which are largely developed for a range of residential, resort and resort residential, commercial and open space uses, and 12.6± square miles within the City's Sphere-of-Influence. There are two Sphere-of-Influence areas in the Planning Area; these occur to the north and east of the City's corporate limits. The northern SOI area is located generally north of Fred Waring Drive and east of Washington Street to Adams Street and includes residential development. The eastern SOI is generally east of Monroe Street to the planning area's eastern boundary (Harrison Street), extending south of Avenue 52 to Avenue 62. These lands are primarily comprised of lower density residential uses with limited commercial development.

### **Residential Land Uses**

Under the Preferred Alternative, a total of 7,481.4 acres of land are allocated to residential uses in the City's corporate limits, and 7,402.7 acres in the SOI areas, for a total of 14,884.1 acres throughout the Planning Area. There are currently 23,489 dwelling units in the incorporated City and 801 in the SOI. The estimate of future build out units in the Planning Area is based on an assumption that 75% of the maximum densities permitted will be developed. Thus, the Planning Area would accommodate an additional 28,880 dwelling units, with 8,180 units in City limits, and 20,699 within the SOI. At build out, the Planning Area is expected to generate a total of approximately 53,170 dwelling units, including both existing and proposed units.

### **Commercial Land Uses**

Under the Preferred Alternative, approximately 1,292 acres are designated for commercial development, including General, Tourist and Village Commercial uses in the City and SOI. There is currently, 6,683,963 square feet of commercial development within the Planning Area. To estimate future build out square footage of commercial units in the General Plan Update Planning area, it is assumed that Commercial lands will build out with 22 percent lot coverage, including buildings and other ancillary structures. Thus, an additional 5,696,960 square feet of commercial uses could be developed throughout the Planning Area, consisting of 3,238,163 square feet within City limits, and 2,458,797 square feet within the SOI.

### **Industrial/Light Manufacturing**

The General Plan Update allocates 63.8 acres to lands designated Industrial/Light Manufacturing, which occur entirely within the eastern SOI. As with commercial, a 22 percent lot coverage for industrial uses is assumed, which provides for 611,408 square feet of Industrial/Light Manufacturing uses at build out.



### Major Community Facilities

The General Plan Update provides for 398 acres of lands designated “Major Community Facilities”, which includes public service facilities, as well as other public and quasi-public facilities.

### Open Space Natural

Approximately 7,476 acres of Open Space Natural land uses are proposed under the General Plan Update. This land use designation includes watercourses, floodways and mountainous areas.

### Open Space Recreational

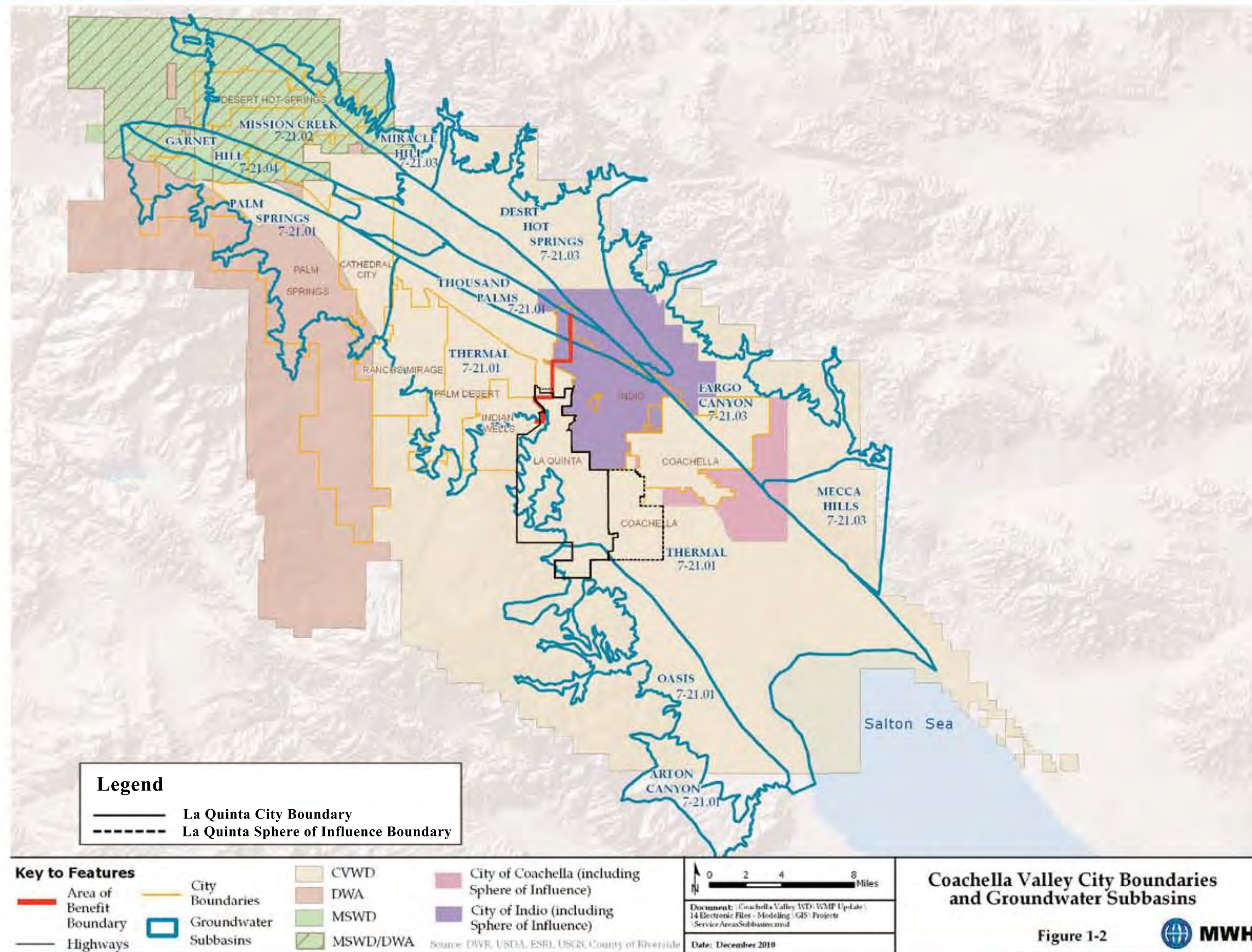
Under the General Plan Update, a total of 4,559.5 acres of Open Space Recreational land uses are proposed. This land use designation includes parks, golf courses, and lands to be developed for recreational purposes.

### Street Rights-of-Way

The proposed General Plan allocates 2,254 acres lands for Street Rights-of-Way to ensure adequate provision for build out of a circulation network adequate to serve future development.

Table 1 shows the designated land uses, acreages, and units planned for each land use, as well as the percentage of the total site occupied by each land use category for the La Quinta Planning Area. Exhibit 2 illustrates the proposed land uses in the Planning Area.

<b>Table 1</b> <b>La Quinta General Plan Update Land Uses</b>						
	Existing Development			Proposed Development		
Land Use Designation	Acres	Units	Square Feet	Acres	Units	Square Feet
<u>City Limits</u>						
Low Density Residential	4,171.2	20,834	6,410,202	1,675.9	5,028	3,238,163
Medium/High Residential	1,284.0	6,655		350.3	3,153	
Commercial	668.9			337.9		
Major Community Facilities	238.0			160.0		
Open Space (Natural)	2,242.7			5,233.3		
Open Space (Recreational)	4,272.0			287.5		
Street Right of Ways	1,676.1			257.6		
<b>Subtotal</b>	<b>14,552.9</b>	<b>23,489</b>	<b>6,410,202</b>	<b>8,302.5</b>	<b>8,181</b>	<b>3,238,163</b>
<u>Sphere of Influence</u>						
Low Density Residential	551.5	801	273,760	6,826.60	20,480	2,458,797 611,408
Medium/High Residential	0.2	0		24.40	219	
Commercial	28.6			256.6		
Industrial/Lgt Mfg.	0.0			63.8		
Major Community Facilities	28.17			1.61		
Street Right of Ways	319.93			0.0		
<b>Subtotal</b>	<b>928.4</b>	<b>801</b>	<b>273,760</b>	<b>7,173.0</b>	<b>20,699</b>	<b>3,070,205</b>
<b>Project Total</b>	<b>15,481.3</b>	<b>24,290</b>	<b>6,683,936</b>	<b>15,475.5</b>	<b>28,880</b>	<b>6,308,368</b>
Source: La Quinta General Plan Update Land Use Plan, December 27, 2010.						

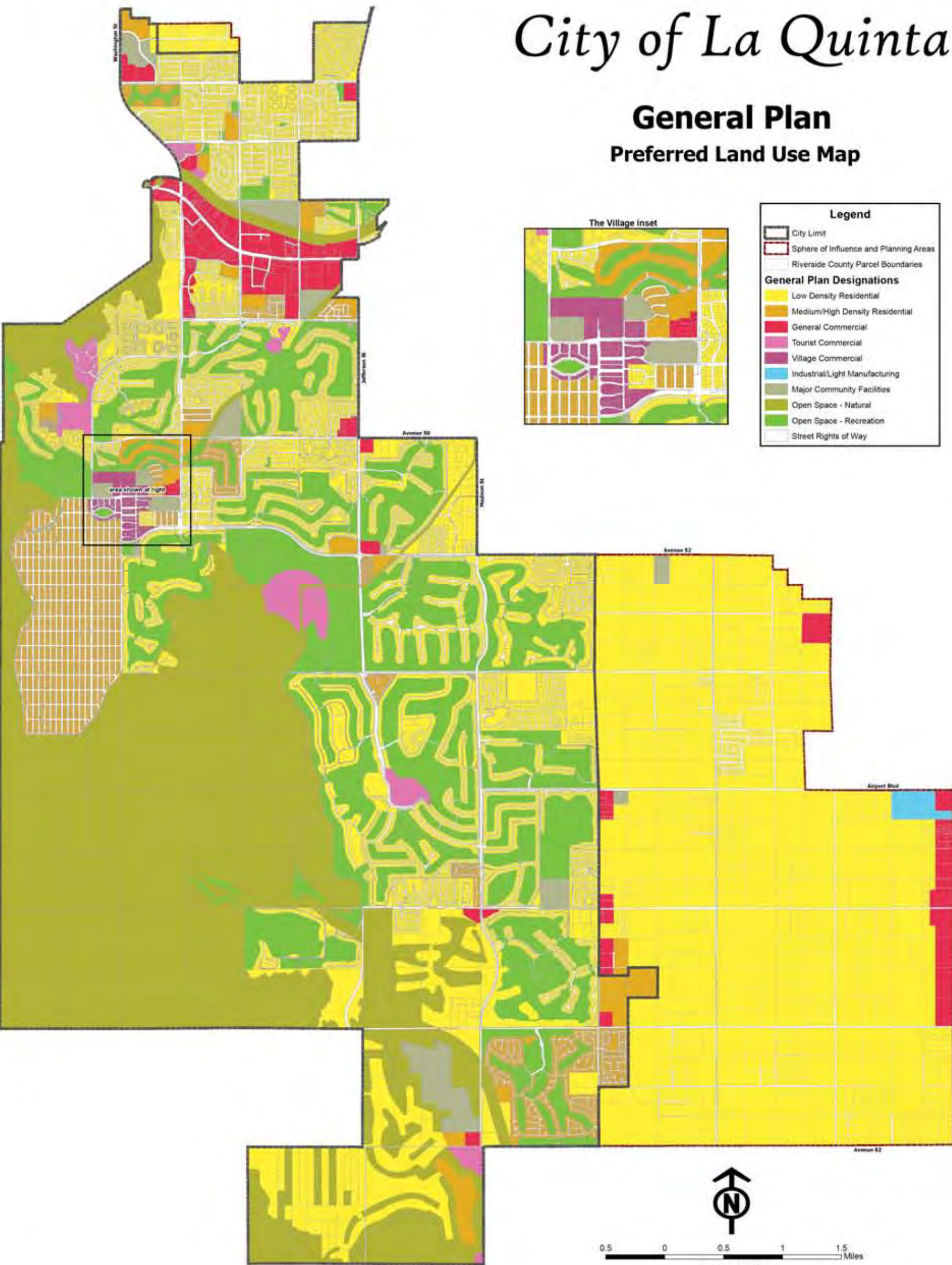


6.27.11



# City of La Quinta

## General Plan Preferred Land Use Map



Source: City of La Quinta, December, 2010

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## **2.2 PUBLIC WATER SUPPLY**

CVWD provides services for domestic water, irrigation water, sanitation sewerage collection, wastewater reclamation and recycling, imported water, stormwater protection, and agricultural drainage. CVWD currently has approximately 107,000 domestic water connections and has a groundwater production capacity of 243 million gallons per day (mgd). The CVWD service area encompasses roughly 640,000 acres, mostly within Riverside County, but also extends into northern Imperial and San Diego Counties. Areas served with domestic water by CVWD include a portion of lands near Desert Hot Springs, the Indio Hills area, and a portion of Cathedral City. CVWD also serves all of Rancho Mirage, Thousand Palms, Palm Desert, Indian Wells, La Quinta, and portions of Indio and Coachella. The District also serves rural communities, including Thermal, Mecca, Desert Shores, Salton Sea Beach, Salton City, North Shore, Bombay Beach, Hot Mineral Springs, and other unincorporated areas of Riverside and Imperial Counties.

The CVWD service area is bordered on the west and north by mountains, which provide an effective barrier against coastal influences and greatly reduce the amount of rainfall in the Valley. Thus, natural recharge to the groundwater basin is limited. The majority of natural recharge occurring within the CVWD service area originates as runoff from the Santa Rosa, San Jacinto, and Little San Bernardino Mountains.

Development throughout the Coachella Valley has been dependent upon groundwater as a source of supply. The demand for groundwater has annually exceeded the limited natural recharge of the groundwater basin. Imported water is used to recharge the aquifer and reduce groundwater overdraft by providing an alternative water source that can be directly applied to agricultural lands, golf courses, developed open space, or treated for consumption.

### **2.2.1 HISTORICAL CONTEXT**

The need to enhance the public water supply in the Coachella Valley has been recognized for many years. The formation of CVWD in 1918 was a direct result of the concern of local residents about a plan to export water from the Whitewater River to Imperial County. Early on, Valley residents also recognized that action was needed to stem the decline of the water table, which was occurring as a result of local pumping in the east Valley. As a result, CVWD entered into an agreement for the construction of the Coachella Branch of the All American Canal in order to bring Colorado River water into the Coachella Valley. Since 1949, the Coachella Branch has been providing water for irrigation to the area that generally encompasses Indio and La Quinta southerly to the Salton Sea. Colorado River water is delivered by an underground irrigation distribution piping system from the approximately 120-mile canal to farms and a growing number of golf courses in the Coachella Valley. In recent years, CVWD has also been using this water source to recharge the Aquifer in the Lower Valley.

To acquire additional water supplies in order to meet the increased water demand from continued growth and development in the Coachella Valley, CVWD and Desert Water Agency (DWA) entered into separate contracts in 1963 with the State of California to procure water deliveries from the State Water Project (SWP). Because a direct pipeline from the SWP system to the Coachella Valley did not and to this day does not exist, CVWD and DWA entered into an exchange agreement with Metropolitan Water District (MWD).



The agreement allows for the exchange of like quantities of CVWD and DWA SWP allocations for MWD allocations of Colorado River water. The water exchange is possible since MWD receives CVWD and DWA SWP deliveries directly, and CVWD and DWA receive MWD Colorado River Water via the Colorado River Aqueduct, which crosses the upper portion of the Coachella Valley near Whitewater. Since 1973, CVWD and DWA have been receiving Colorado River water from MWD's Colorado River Aqueduct turnout located at Whitewater Canyon to replenish groundwater in the Valley and reduce groundwater extraction by providing an alternate water supply.

In order to further limit the use of groundwater, CVWD has been recycling reclaimed wastewater since 1967 and operates six water reclamation plants, three of which currently recycle water. Recycled water is used for golf course and greenbelt irrigation throughout CVWD's service area.

CVWD and DWA have historically utilized imported SWP Exchange water to replenish groundwater supplies. Recharge to the West Valley has been underway since 1973 at the Whitewater River Spreading Facility, which is estimated to have a recharge capacity of over 300,000 acre-feet per year. Between 1973 and 2009 over 2 million acre-feet of SWP exchange water have been recharged to the West Valley.

There are currently two recharge facilities in the East Valley, one near Lake Cahuilla (Levy), and one on the Martinez Canyon alluvial fan. The Thomas E. Levy (Levy) Facility was completed in 2009 and has a recharge capacity of 40,000 acre-feet per year. The Martinez Canyon Facility is expected to recharge 20,000 to 40,000 acre-feet annually upon completion, which is expected by 2018. Combined these facilities have recharged approximately 97,222 acre feet of Colorado River water from 1997 through 2010.<sup>1</sup>

## **2.3 CVWD WATER PLANNING DOCUMENTS**

The Coachella Valley Water District released the draft 2010 UWMP in March of 2011. In addition to the UWMP, CVWD has several other water planning documents, including the Regional Water Management Plan and the annual Engineers' Reports. Each of these documents is described below.

### **2.3.1 COACHELLA VALLEY WATER MANAGEMENT PLAN**

CVWD initiated a water management planning process in the early 1990s to address the overdraft conditions in the Aquifer and to ensure that there would be adequate water supplies in the future. The Coachella Valley Water Management Plan (CVWMP) is the product of this planning process. The Board of Directors approved the CVWMP on October 8, 2002. As part of the CVWMP planning process, a Program Environmental Impact Report (PEIR) was prepared in accordance with CEQA guidelines. The PEIR was circulated through the State Clearinghouse and to the public for extensive review. A Final PEIR was certified for the CVWMP in September 2002.

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<sup>1</sup> "Engineer's Report on Water Supply and Replenishment Assessment- Lower Whitewater River Subbasin Area of Benefit 2011-2012," prepared by the Coachella Valley Water District, May 2011.

In December of 2010, a draft update to the CVWMP was released for review and comment. The 2010 Draft CVWMP is the most up-to-date regional water management document for the Coachella Valley. The CVWMP utilizes a conjunctive management approach incorporating local and regional water resource conservation, all available sources of water supply, and water demand use efficiencies in an effort to guide CVWD in assuring a long-term reliable supply of water resources throughout the Coachella Valley.

### **2.3.2 URBAN WATER MANAGEMENT PLAN**

CVWD completed a draft update of the Urban Water Management Plan (UWMP) in December 2010, as required under California Water Code, Division 6, Part 2.6. Data used in the UWMP was based on information in the updated 2010 CVWMP. Domestic water demand projections and State Water Project (SWP) purchases and reliability were updated in the draft 2010 UWMP to reflect changes in long-term delivery and reliability of SWP supplies consistent with the 2009 SWP Delivery Reliability Report. The most recently adopted UWMP is the 2005 version, which was adopted by the CVWD Board on December 13, 2005. The 2010 draft Update UWMP is expected to be adopted by the board in July 2011. Both the 2010 draft UWMP and the CVWMP are included in this WSS by reference.

### **2.3.3 ADDITIONAL COACHELLA VALLEY WATER DISTRICT DOCUMENTATION**

Additional documentation used for this WSS include the CVWD Engineer's Reports on Water Supply and Replenishment Assessments. These yearly reports are completed for the three groundwater Subbasins within CVWD's service area; Lower Whitewater River Subbasin, Upper Whitewater River Subbasin; and Mission Creek Subbasin. These reports are required by the State Water Code before CVWD can levy and collect groundwater replenishment assessments. The Engineer's Reports describe the condition of groundwater supplies, need for groundwater replenishment, identification of the area of benefit, water production within the area, and replenishment assessments to be levied upon water producers.

The CVWD Water System Backup Facilities Charge Study is also referenced in this WSS. The Study is updated about every two years and provides the most up-to-date water demand factors by development type. This study assesses all new development and redevelopment projects within the CVWD service area and identifies water demand by development type, calculates facility costs, and establishes charges to ensure domestic water availability for future development.

Another reference document used in this WSS is CVWD's Landscape Ordinance 1302.1, which puts a limit on the type of plant materials, plant density, and the maximum water allowed per acre of landscaped area.

## 3.0 WATER DEMANDS

### 3.1 LA QUINTA GENERAL PLAN WATER DEMAND ESTIMATES

The methodology utilized to estimate the existing water demand within the Planning Area and to project future water demand at build out of the proposed La Quinta General Plan Update is described in detail in Appendix A. Briefly, water demand estimates for existing and proposed development are calculated separately and summed for the total estimated water demand at build out. Water demand estimates are provided for the Planning Area as a whole, and individually for City Limits and the Sphere of Influence. Water demands for landscaping are shown separate from potable water demands for each land use.

The following figures show the relative portion of the water demand that will be generated by existing and proposed development within City limits and the Sphere of Influence. Figure 1 shows that 83% of the 2035 water demand within City Limits will be generated by existing development and 17% by new development. Figure 2 shows that 92% of the water demand within the Sphere of Influence will be generated by proposed development and 8% will be generated by existing development.

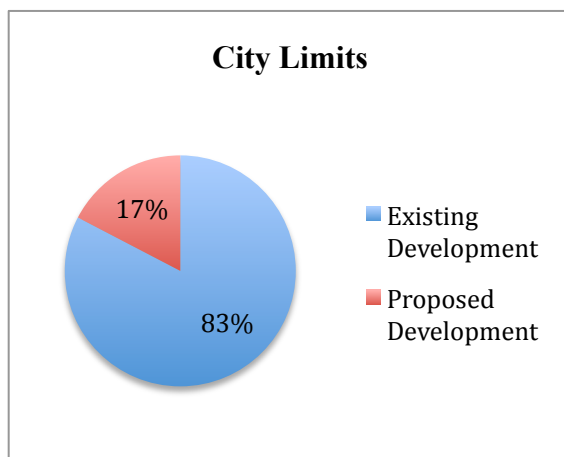


Figure 1: Water Demands within City Limits

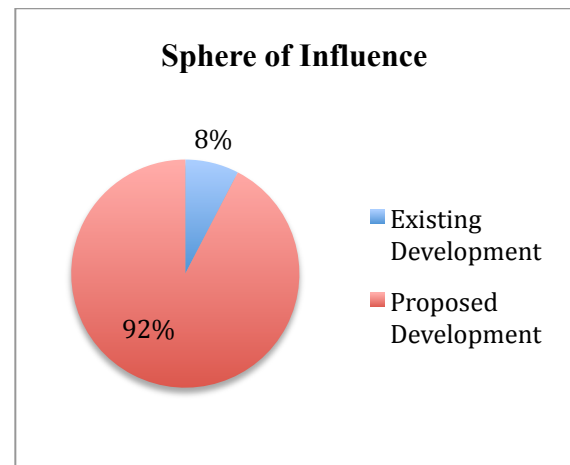


Figure 2: Water Demand within SOI

Several assumptions are made in order to calculate existing and future water demands of the Planning Area. It should be noted that water demand estimates herein are intended to provide a sense of scale for the various land uses proposed, rather than predict actual water consumption. Water use and consumption rates are variable depending on consumer behavior, cost, climate, and other factors. The approach utilized herein relies upon population, as well as land uses, to estimate water demands.

Water demand projections at build out of the proposed La Quinta General Plan Update are provided for the following scenarios: a) the business as usual scenario, which assumes that all new development will generate water demands at the same rate as existing development; b) the water efficiency scenario, which assumes that new development adheres to water efficient principals and existing development continues to generate the same level of water demand; and c) the retrofit plus efficiency scenario, which assumes that new development adheres to water efficient principals and existing development is retrofitted to reduce water demands.

### 3.1.1 BUSINESS AS USUAL

The Business As Usual Scenario assumes that all new development generates similar water demands for each land use that is consistent with the existing water demands generated by each land use. That is, existing rates of water consumption observed for current development continue and are applied to all new development. This scenario assumes that no additional water conservation is achieved. Thus, the following tables show the projected water demands at build out of the proposed La Quinta General Plan under business as usual conditions. Tables 2, 3, and 4 below provide the estimated water demands from all existing and planned future land uses within City Limits, the Sphere of Influence, and the entire Planning Area, respectively.

As seen in Table 2 the water demand generated within City limits at build out under business as usual conditions (BAU) is estimated to be approximately 34.5 million gallons per day (mgd) or about 38,675 acre-feet per year.

<b>Table 2</b> <b>Estimate of Water Service Demands for City Limits BAU</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	9,538.70	5,079.13	14,617.83	13.05
Medium/High Density Residential	1,527.90	1,140.65	2,668.55	2.38
Commercial	496.72	1,516.61	2,013.33	1.80
Major Community Facilities	500.14	187.28	687.43	0.61
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	17,765.65	N/A	17,765.65	15.86
Streets, Sidewalks, Medians	922.39	N/A	922.39	0.82
<b>Total</b>	<b>30,751.51</b>	<b>7,923.67</b>	<b>38,675.18</b>	<b>34.53</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

It is estimated that, at build out, all existing and planned future development within the Sphere of Influence, under BAU conditions, will generate a water demand of approximately 16.6 million gallons per day (mgd) or about 18,644 acre-feet per year, as shown in Table 3.

<b>Table 3</b> <b>Estimate of Water Service Demands for SOI BAU</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	13,305.62	4,179.45	17,485.07	15.61
Medium/High Density Residential	25.99	43.01	69.00	0.06
Commercial	192.99	525.63	718.62	0.64
Major Community Facilities	32.70	14.01	46.72	0.04
Streets, Sidewalks, Medians	324.17	N/A	324.17	0.29
<b>Total</b>	<b>13,881.47</b>	<b>4,762.10</b>	<b>18,643.57</b>	<b>16.64</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				



The entire Planning Area for the City of La Quinta is projected to generate a water demand of approximately 51 million gallons per day (mgd) or about 57,319 acre-feet per year at build out, under BAU, as shown in Table 4.

<b>Table 4</b> <b>Estimate of Water Service Demands Overall Planning Area BAU</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	22,844.32	9,258.58	32,102.89	28.66
Medium/High Density Residential	1,553.88	1,183.66	2,737.55	2.44
Commercial/Industrial	689.71	2,042.24	2,731.95	2.44
Major Community Facilities	532.85	201.29	734.14	0.66
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	17,765.65	N/A	17,765.65	15.86
Streets, Sidewalks, Medians	1,246.56	N/A	1,246.56	1.11
<b>Total</b>	<b>44,632.97</b>	<b>12,685.77</b>	<b>57,318.75</b>	<b>51.17</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

### 3.1.2 EXISTING BAU & NEW DEVELOPMENT WATER EFFICIENCY

The Existing BAU and New Development Water Efficiency Scenario (BAU&NDE) assumes that all new development achieves greater levels of water conservation compared to existing water demands. Under this scenario water demand generated by all new development is more water efficient due to the installation of low water demanding appliances, faucets, and water efficient irrigation systems and low water demanding landscaping. Existing land uses that are currently developed are assumed to continue generating the same level of water demand through build out under this scenario. Thus, existing rates of water consumption observed for current development continue, and new development achieves reduced water demands. The following tables show the projected water demands at build out of the proposed La Quinta General Plan under the new development water efficiency conditions. Tables 5, 6, and 7 below provide the estimated water demands from all existing and planned future land uses within City Limits, the Sphere of Influence, and the entire Planning Area, respectively.

As seen in Table 5, the water demand generated within City limits at build out is estimated to be approximately 33.7 million gallons per day (mgd) or about 37,783 acre-feet per year.

<b>Table 5</b> <b>Estimate of Water Service Demands for City Limits BAU&amp;NDE</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	9,294.22	4,881.63	14,175.85	12.66
Medium/High Density Residential	1,502.34	1,016.81	2,519.15	2.25
Commercial	496.72	1,360.39	1,857.11	1.66
Major Community Facilities	476.80	149.64	626.44	0.56
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	17,681.77	N/A	17,681.77	15.79
Streets, Sidewalks, Medians	922.39	N/A	922.39	0.82
<b>Total</b>	<b>30,374.25</b>	<b>7,408.47</b>	<b>37,782.72</b>	<b>33.73</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

It is estimated that, at build out, all existing and planned future development within the Sphere of Influence, as set forth in the proposed General Plan, under the new development water efficiency scenario, will generate a water demand of approximately 14.89 million gallons per day (mgd) or about 16,684 acre-feet per year, as shown in Table 6.

<b>Table 6</b> <b>Estimate of Water Service Demands for SOI BAU&amp;NDE</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	12,309.74	3,375.02	15,684.76	14.00
Medium/High Density Residential	24.21	34.41	58.62	0.05
Commercial	192.99	377.52	570.51	0.51
Major Community Facilities	32.47	13.63	46.10	0.04
Streets, Sidewalks, Medians	324.17	N/A	324.17	0.29
<b>Total</b>	<b>12,883.57</b>	<b>3,800.58</b>	<b>16,684.15</b>	<b>14.89</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

The entire Planning Area for the City of La Quinta is projected to generate a water demand of approximately 48.62 million gallons per day (mgd) or about 54,467 acre-feet per year at build out, as shown in Table 4.

<b>Table 7</b> <b>Estimate of Water Service Demands Overall Planning Area BAU&amp;NDE</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	21,603.95	8,256.66	29,860.61	26.66
Medium/High Density Residential	1,526.55	1,051.22	2,577.77	2.30
Commercial/Industrial	689.71	1,737.91	2,427.62	2.17
Major Community Facilities	509.27	163.27	672.54	0.60
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	17,681.77	N/A	17,681.77	15.79
Streets, Sidewalks, Medians	1,246.56	N/A	1,246.56	1.11
<b>Total</b>	<b>43,257.82</b>	<b>11,209.05</b>	<b>54,466.87</b>	<b>48.62</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

Under this scenario, water conservation is realized for all new development relative to existing development with comparable land uses. This is accomplished, in part, through implementation of the CVWD Landscape Ordinance 1302.1, and Title 24 building codes, which require the use of modern water-efficient appliances. The Landscape Ordinance establishes guidelines and sets limits for plant materials, plant density, and the maximum water allowed per acre of landscaping. Title 24 requires the use of appliances and devices that have been certified by their manufacturer to meet or exceed minimum specification or efficiencies set forth by the California Energy Commission. The use of modern development standards will limit indoor water consumption through the use of water conserving appliances, such as low flush toilets, and water efficient dishwashers, washing machines, faucets, and fixtures.

### 3.1.3 RETROFIT EXISTING AND NEW DEVELOPMENT WATER EFFICIENCY

The Retrofit Existing and New Development Water Efficiency Scenario assumes that all new development achieves water conservation and existing development is retrofitted to achieve the same level of water conservation realized by new development. Under this scenario, all existing and new development utilizes the most water efficient appliances, faucets, and irrigation systems and landscaping is primarily desert or drought tolerant species with limited turf. Thus, existing rates of water consumption observed for current development are reduced through retrofitting programs such as turf buyback, incentives to upgrade appliances, and tiered water rates. The following tables show the projected water demands at build out of the proposed La Quinta General Plan under the retrofit existing and new development water efficiency scenario (RE&NDE).

Tables 8, 9, and 10 below provide the estimated water demands from all existing and planned future land uses within City Limits, the Sphere of Influence, and the entire Planning Area, respectively. As seen in Table 8, under this scenario, the water demand generated within City limits at build out is estimated to be approximately 31 million gallons per day (mgd) or about 34,768 acre-feet per year.

<b>Table 8</b> <b>Estimate of Water Service Demands for City Limits RE&amp;NDE</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	8,775.60	4,063.30	12,838.91	11.46
Medium/High Density Residential	1,422.52	912.52	2,335.05	2.08
Commercial	496.72	1,051.14	1,547.87	1.38
Major Community Facilities	410.22	93.64	503.86	0.45
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	16,619.48	N/A	16,619.48	14.84
Streets, Sidewalks, Medians	922.39	N/A	922.39	0.82
<b>Total</b>	<b>28,646.95</b>	<b>6,120.61</b>	<b>34,767.56</b>	<b>31.04</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

It is estimated that, at build out, all existing and planned future development within the Sphere of Influence, under the retrofit existing and new development water efficiency scenario, will generate a water demand of approximately 14.78 million gallons per day (mgd) or about 16,556 acre-feet per year, as shown in Table 9.

<b>Table 9</b> <b>Estimate of Water Service Demands for SOI RE&amp;NDE</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	12,241.17	3,343.47	15,584.64	13.91
Medium/High Density Residential	24.19	34.41	58.60	0.05
Commercial	197.37	364.31	561.68	0.50
Major Community Facilities	20.21	7.01	27.22	0.02
Streets, Sidewalks, Medians	324.17	N/A	324.17	0.29
<b>Total</b>	<b>12,807.11</b>	<b>3,749.19</b>	<b>16,556.30</b>	<b>14.78</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

The entire Planning Area for the City of La Quinta is projected to generate a water demand of approximately 45.82 million gallons per day (mgd) or about 51,324 acre-feet per year at build out, as shown in Table 10.

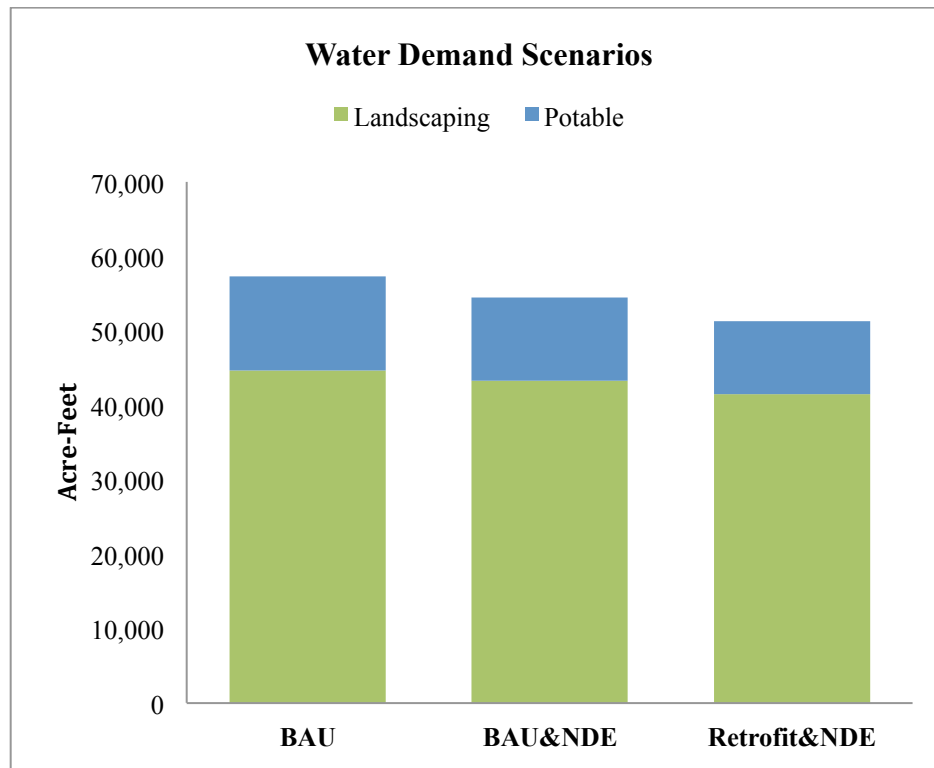
<b>Table 10</b> <b>Estimate of Water Service Demands Overall Planning Area RE&amp;NDE</b>				
<b>Land Use Designation</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	21,016.77	7,406.77	28,423.54	25.37
Medium/High Density Residential	1,446.72	946.93	2,393.65	2.14
Commercial/Industrial	694.09	1,415.45	2,109.54	1.88
Major Community Facilities	430.43	100.65	531.08	0.47
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	16,619.48	N/A	16,619.48	14.84
Streets, Sidewalks, Medians	1,246.56	N/A	1,246.56	1.11
<b>Total</b>	<b>41,454.06</b>	<b>9,869.80</b>	<b>51,323.86</b>	<b>45.82</b>
Source: "La Quinta General Plan Water Resources Projections," Appendix A to Water Supply Assessment, prepared by Terra Nova Planning & Research Inc., January 2011.				

The La Quinta General Plan Update is in compliance with the objectives of the UWMP in that substantial water conservation is realized for all new development relative to existing development with comparable land uses. This is accomplished, in part, through implementation of the CVWD Landscape Ordinance 1302.1, and Title 24 building codes, which require the use of modern water-efficient appliances. The Landscape Ordinance establishes guidelines and sets limits for plant materials, plant density, and the maximum water allowed per acre of landscaping. Title 24 requires the use of appliances and devices that have been certified by their manufacturer to meet or exceed minimum specification or efficiencies set forth by the California Energy Commission. The use of modern development standards will limit indoor water consumption through the use of water conserving appliances, such as low flush toilets, and water efficient dishwashers, washing machines, faucets, and fixtures.

### 3.1.4 SUMMARY OF LA QUINTA GENERAL PLAN WATER DEMAND SCENARIOS

The following table and figure show the relative water demand for each scenario described above. The BAU scenario generates the greatest water demand since no further water conservation is pursued. The BAU & NDE scenario achieves some water conservation since all new development is water efficient. The retrofit & NDE scenario realizes the greatest water savings since new development is water efficient and existing development is retrofitted to be water efficient.

<b>Table 11</b> <b>Water Demand Scenarios 2035 Summary</b> <b>(Acre-Feet)</b>			
	<b>BAU</b>	<b>BAU &amp; NDE</b>	<b>Retrofit &amp; NDE</b>
Landscaping	44,633	43,258	41,454
Potable	12,686	11,209	9,870
Total	57,319	54,467	51,324
Source: Appendix A			



**Figure 3: Water Demand Scenarios**

As seen in the above tables and figures, landscaping is the greatest water demanding component. Water demand from landscaping represents approximately 80% of all water demands. The largest landscaping demands are generated by low density residential and open space recreation. Combined, these land uses account for approximately 87% of the total projected water demand generated by irrigation of landscaped areas within the Planning Area.

### 3.2 REGIONAL WATER DEMANDS

Groundwater supplies from the Whitewater Subbasin are utilized by a variety of public water suppliers, including CVWD, DWA, MSWD, the City of Coachella, Indio Water Authority (IWA), and the Myoma Dunes Mutual Water Company. Other groundwater users include tribes, individual residents, farmers, golf courses, businesses and commercial facilities. As discussed in the 2010 WMP, the Whitewater River Subbasin is divided into two management areas, consisting of the Upper Whitewater River Subbasin Area of Benefit (AOB), and the Lower Whitewater River Subbasin AOB.

Both the 2002 Coachella Valley Water Management Plan (CVWMP) and CVWD's annual Engineering Reports provide the historical use of groundwater in the Whitewater River Subbasin. Groundwater use increased steadily from 92,400 acre-feet per year in 1936 to about 376,100 acre-feet per year in 1999.<sup>2</sup> In 2010 the estimated groundwater production was 181,233 acre-feet and 150,000 acre-feet within the upper and lower portions of the Whitewater River Subbasin respectively, for a combined total groundwater production of approximately 331,233 acre-feet. This includes groundwater produced from all water purveyors in the Whitewater Subbasin, including CVWD, DWA, IWA, and other individual private users. The decline in groundwater production between 1999 and 2010 is a result of groundwater conservation efforts, source substitution projects, and effects of the recent economic recession.

Table 12 below shows the historic groundwater production from regional groundwater resources including the Whitewater River Subbasin and Mission Creek.

<b>Table 12</b> <b>Regional Groundwater Production</b> <b>(Acre-Feet)</b>						
	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Mission Creek	16,315	17,751	17,007	16,270	15,156	14,303
Lower Whitewater River	172,000	172,000	172,000	172,000	160,000	150,000
Upper Whitewater River	203,912	213,037	209,503	210,530	198,713	181,233
<b>Total Pumped</b>	<b>392,227</b>	<b>402,788</b>	<b>398,510</b>	<b>398,800</b>	<b>373,869</b>	<b>345,536</b>
Source: CVWD UWMP Table 4-5 Total Historical Groundwater Production						

As a regional water supplier, CVWD coordinates with other water agencies that share common groundwater resources to establish goals, policies, and programs that assure long term viability and reliability of groundwater reserves. The CVWMP and UWMP address these shared groundwater resources and describe conservation programs, recharge activities, and source substitution programs that facilitate regional groundwater management.

The following discussion focuses on CVWD's service area of benefit.

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<sup>2</sup> "CVWD Water Management Plan," Table 3-2: Summary of Historic water Supplies, prepared by CVWD, December 2002.

### 3.2.1 CVWD HISTORICAL WATER USE

The following table shows the historic groundwater use within the CVWD service area from 1995 through 2010.<sup>3</sup> All of CVWD's urban water demands are currently met through groundwater production from the region's Subbasins. In 2010 CVWD's groundwater demands constituted 31.6% of the regional groundwater demands.

<b>Table 13</b> <b>CVWD Historic Water Demands</b>			
<b>Year</b>	<b>Population</b>	<b>Gross Water Use (AFY)</b>	<b>Per Capita Water Use (gpcd)</b>
1995	145,329	91,826	564
1996	150,333	96,192	571
1997	152,350	94,114	551
1998	159,051	98,472	553
1999	165,160	106,805	577
2000	171,289	117,547	613
2001	175,616	116,916	594
2002	184,629	123,219	596
2003	180,305	121,231	600
2004	188,358	124,139	588
2005	193,536	121,737	562
2006	195,570	134,988	616
2007	198,363	129,871	584
2008	198,976	129,273	580
2009	201,568	123,825	548
2010	202,660	109,488	482
Source: CVWD 2010 UWMP Table 3-1 and 4-6.			

#### City of La Quinta

Although it is difficult to precisely estimate the City of La Quinta's share of the CVWD service area demands, a relative per capita comparison is used to estimate the City's share. In 2010, the City of La Quinta's population was estimated to be 37,467. Assuming a per capita water use of 482 gallon per day, the City of La Quinta is estimated to generate an annual water demand of 20,223 acre-feet for 2010 or 18% of the 2010 CVWD service area's urban water demand.

### 3.2.2 CVWD PROJECTED WATER USE

Table 14 below shows the projected urban water demands expected to be generated within CVWD's service area in the year 2035. The service area population for 2035 is estimated to be 512,200 for a total per capita water demand of 423 gallons per day.

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<sup>3</sup> "CVWD Urban Water Management Plan Update," Table 3-1, prepared for CVWD, December 2010.



<b>Table 14</b> <b>CVWD UWMP Projected Water Demands</b> <b>2035</b>		
	# of Accounts	Volume (AFY)
Single Family	223,900	134,800
Multi-family	10,000	19,400
Commercial	8,400	10,900
Institutional/governmental	830	2,300
Landscape	12,100	65,300
Construction	440	2,100
System Losses	N/A	7,900
<b>Total</b>	<b>255,670</b>	<b>242,700</b>
Source: CVWD 2010 UWMP: Tables 3-12 and 3-18.		

As mentioned above, CVWD's urban water demands are currently met through 100% groundwater supplies. The table below shows that by the year 2035, 53% of urban water demands will be met through supplies other than groundwater.

<b>Table 15</b> <b>Projected Groundwater Production CVWD</b> <b>(Acre-Feet)</b>					
	2015	2020	2025	2030	2035
Mission Creek	5,000	6,000	6,900	7,100	7,700
Lower Whitewater River	33,200	31,100	30,100	28,400	19,500
Upper Whitewater River	80,500	88,500	92,900	98,000	101,500
<b>Total Groundwater</b>	<b>118,700</b>	<b>125,600</b>	<b>129,900</b>	<b>133,500</b>	<b>128,700</b>
<b>Total Urban Water Use</b>	<b>125,800</b>	<b>156,100</b>	<b>187,700</b>	<b>212,00</b>	<b>242,700</b>
% of Groundwater	94%	81%	69%	63%	53%
Source: CVWD UWMP Table 3-19 Urban Water Use and Table 4-7 CVWD Future Groundwater Production.					

Water supplies within the CVWD service area are further described in detail in Section 4 below.

### 3.3 LA QUINTA GP CONSISTENCY DETERMINATION WITH CVWD UWMP

Water use is dependent on a number of variables and changes with climate, economic conditions, new technologies, and education. The water demand projections set forth for the CVWD service and the La Quinta General Plan are indented to provide a rough approximation of the major water demanding land uses and the relative water demands that will be generated by various land use development scenarios and population densities. Such data and modeling allow for informed policies to encourage growth and development in a manner that maximizes use of available water resources while assuring that water demands are met and water supply resources are sustained.



The CVWMP and the CVWD UWMP utilize population forecasts that were set forth by the Riverside County Center for Demographic Research (RCCDR) in the 2006 Riverside County Projections (RCP-06). These forecasts were partially based on 2000 census data, which excluded second homes and seasonal residents. Thus, population projections set forth in the CVWD WMP and used as the basis for water demand projections in the UWMP are somewhat understated in that they do not capture seasonal residents. Furthermore, population projections set forth under the UWMP assume that build out occurs by 2050.

Latest census data from 2010 has resulted in modified population projections relative to the previous population forecasts. Growth rate projections utilized in the CVWD UWMP are somewhat different than the growth rate projections as they are understood today. Current forecasts predict a reduced population compared to previous predictions. The CVWMP notes that Riverside County is currently updating its General Plan, which may affect projected population growth for the Vista Santa Rosa region and the other unincorporated areas of Riverside County. The same holds true for incorporated jurisdictions within the County, including those within the CVWD service area such, as the City of La Quinta.

The General Plan for the City of La Quinta has based population projections on land uses, allowable densities, and the 2010 census data. The La Quinta General Plan estimates existing and future population based on the number of existing and planned future residential dwelling units and a household population size of 2.53 for City limits and the Sphere of Influence. Furthermore, for analysis purposes and to show the greatest potential water demand that may be generated under the proposed land use scenario, it is assumed that build out of the General Plan will occur by 2035. As such, population forecasts and associated water demands projected for 2035 analyzed herein are conservative relative to regional forecasts since population densities are not expected to be realized until 2050 or beyond. Nonetheless, for analysis purposes, build out conditions are analyzed, and build out is assumed to occur by 2035.

Population forecasts set forth in the CVWD UWMP and the census data do not account for the seasonal population associated with second home owners. As such, it is appropriate to consider the 27.5% vacancy rate<sup>4</sup> for seasonal residents in order to compare the population projections set forth by CVWD relative to what is proposed in the La Quinta General Plan Update. With the consideration of the vacancy rate from seasonal residents, the population projections between the City's General Plan and CVWD's UWMP and WMP are more or less consistent.

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<sup>4</sup> 2010 Census

Table 16 below shows the 2010 and 2035 population estimates as set forth in the CVWMP and the population estimates generated by the land uses proposed under the La Quinta General Plan Update. It should be noted that Riverside County population estimates for unincorporated areas, including the proposed La Quinta Sphere of Influence, are provided as an overall total. Thus, the SOI population forecast below is from the proposed General Plan estimates.

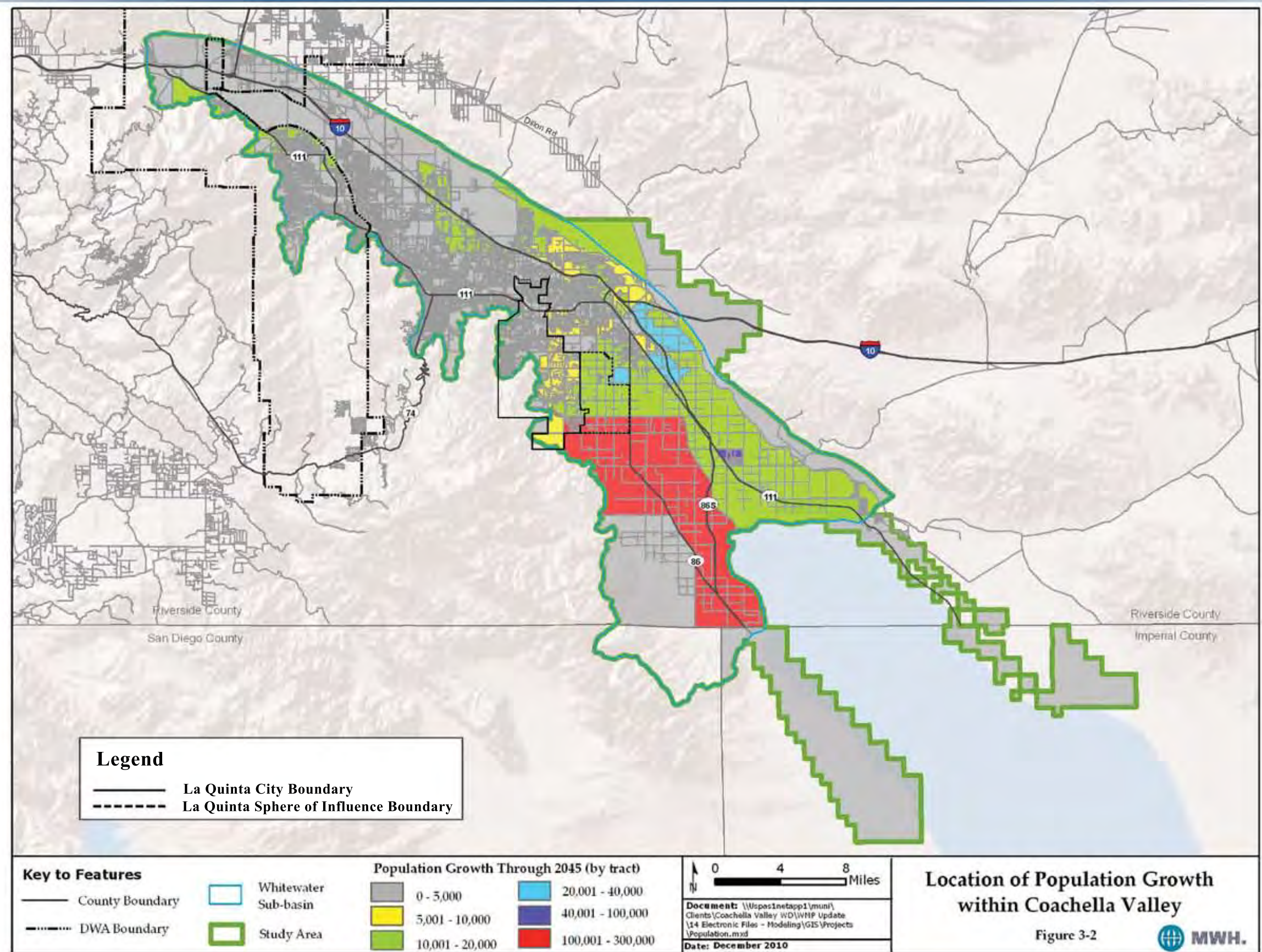
<b>Table 16 Population Forecasts</b>		
	<b>2010</b>	<b>2035</b>
CVWD Service Area	202,660	512,200
La Quinta City Limits (RCP-06)	45,272	57,937
La Quinta City Limits (2010 Census) <sup>1</sup>	37,467	46,297
LQ GP City Limits Full Occupancy <sup>2</sup>	59,427	80,124
LQ GP City Limits 27.5% Vacancy <sup>3</sup>	43,085	58,090
La Quinta SOI (LQGP)	2,027	54,396
1. SCAG data using 2010 census, May 2011.		
2. Assumes full occupancy of all residential development set forth under the proposed General Plan Update. Build out is assumed to occur by 2035.		
3. Assumes a 27.5% vacancy rate consistent with the 2010 Census.		

Assuming buildout in 2035 and full time occupancy of all existing and proposed dwelling units, the La Quinta General Plan Update proposes a population growth that is 28% greater than the population growth that was considered in the CVWD UWMP. This difference accounts for seasonal residence, which, as reported in the 2010 Census account for 27.5% of the vacancy rate. Given that the City of La Quinta is a seasonal community with a highly fluctuating population on an annual basis, the 27.5% vacancy rate was applied to the La Quinta General Plan population forecasts to assess consistency with the CVWD projections. With the consideration of the vacancy rate, the existing and projected population as set forth in the 2010 General Plan for City Limits differs by 0.003% of what was projected in the CVWD UWMP.

As mentioned above, for analysis purposes the full occupancy population of 80,124 for City limits and 54,396 for the Sphere of Influence is utilized to estimate water demands for the Planning Area at build out in 2035.

Both CVWD and the La Quinta General Plan population projections show that substantial growth will occur within the Sphere of Influence. Exhibit 3 below shows the relative growth projections expected to occur throughout the Valley and identifies the La Quinta Planning Area.







Growth projections for the La Quinta Planning Area and the associated water demands vary depending on the methodology utilized for projections. Associated water demands based on CVWD's per capita water usage rates are provided below in Tables 17 and 18.

As mentioned above and described in the CVWD UWMP, water demand projections are estimated based on population as well as land uses. For analysis purposes, full occupancy is assumed in order to capture all potential water demand that may be generated by existing and future residents within the La Quinta Planning Area.

Tables 17 and 18 provide comparisons of projected water demands for the City of La Quinta in 2010 and 2035 based on the CVWD UWMP and population projections and land use development set forth in the proposed La Quinta General Plan Update. Project specific water use estimates are consistent with the per capita estimates.

<b>Table 17</b> <b>Relative Water Demands 2010</b>				
	Project-Specific (AFY) <sup>1</sup>	Per Capita Water Use (gpcd)	Per Capita Water Use (AFY) <sup>2</sup>	Per Capita Water Use (gpcd)
CVWD Service Area <sup>3</sup>	N/A	N/A	109,488	482
La Quinta City Limits	31,227	469	32,085	482
La Quinta SOI	1,268	555	1,095	482
<b>LQ Planning Area</b>	<b>32,945</b>	<b>473</b>	<b>33,180</b>	<b>482</b>
LQ City % of CVWD Demand	29%	N/A	29%	N/A
1 LQ GP Specific Water Demand Estimates, Appendix A. 2 Based 482 gpcd as set forth in Table 3-1 of the UWMP, and LQ GP proposed residential development. 3. Table 3-20 of the 2010 UWMP.				

In 2035, project specific estimates for the Sphere of Influence are substantially less than what is estimated on a per capita basis. This is due to the limited landscaping and outdoor water use proposed for the SOI under the La Quinta General Plan Update. The per capita water demand for City Limits, as shown in Table 18 below, includes water demands generated by irrigation of golf courses, and are consistent with per capita estimates. Assuming that all irrigation of golf courses is met through non-potable supplies by 2035, the total project-specific water demand for City limits would be 20,100 acre-feet for a per capita water demand of 133 gallons per day.

<b>Table 18</b> <b>Relative Water Demands 2035</b>				
	Project-Specific (AFY) <sup>1</sup>	Per Capita Water Use (gpcd)	Water Use (AFY) <sup>2</sup>	Per Capita Water Use (gpcd)
CVWD Service Area <sup>3</sup>	N/A		242,700	423
La Quinta City Limits	37,783	421	37,966	423
La Quinta SOI	16,684	256	27,525	423
<b>LQ Planning Area</b>	<b>54,467</b>	<b>361</b>	<b>65,491</b>	<b>423</b>
LQ City % of CVWD Demand	16%		16%	
1 LQ GP Specific Water Demand Estimates, Appendix A. 2 Based 482 gpcd as set forth in Table 3-1 of the UWMP, and LQ GP proposed residential development. 3 CVWD 2010 UWMP Table 3-20.				

Consistency Determination for Policy

In order to be consistent with the draft 2010 UWMP under the land use densities proposed, the City of La Quinta must reduce its per capita water demands to below 423 gallon per capita per day, assure that all new development achieves water efficient standards, and implement retrofitting programs to reduce water demands associated with existing development. Retrofitting programs for the La Quinta City Limits are especially important given that 80% of the land uses are currently developed. Programs that specifically address water use for open space recreation and single family residential land uses will be the most effective since these constitute the greatest water demanding land uses.

The Sphere of Influence on the other hand is mostly undeveloped, and therefore policies and programs should be focused on limiting water demands generated by new development. Under the proposed General Plan, the greatest water demanding land use is single family residential. As such, policies and regulation that focus on reducing water demands associated with residential landscaping will achieve the greatest water savings in the Sphere of Influence.

In addition to the use of technology, such as smart irrigation meters and low water using appliances, education and outreach can be effective tools in changing consumer behavior and achieving water conservation. As such, policies and programs that address consumer awareness, distribution of water use efficiency information, and incentives should be extended to water customers.

See Section 5.2.2 for suggested mitigation to reduce the La Quinta General Plan water use demands to levels that are consistent with the 2010 UWMP Update.

## **4.0 WATER SUPPLY SOURCES**

CVWD has prepared a water management plan for the Coachella Valley, the Coachella Valley Water Management Plan (WMP) 2010 Update, that identifies all existing and planned future water supplies. The following discussion identifies water supplies, water rights, and water service contracts such as groundwater, imported water, including Colorado River water and State Water Project (SWP) exchange water, recycled water, desalinated water, and a limited amount of surface water. A description of the quantities of water received in prior years by CVWD, as well as future availability, is also provided.

### **4.1 GROUNDWATER SUPPLIES**

The following discussion provides a description of the groundwater supplies, CVWD's rights to use the basin, the overdraft status of the basin, existing and planned overdraft mitigation efforts, as well as the historical and projected use of the basin.

#### **4.1.1 GROUNDWATER**

Groundwater supplies throughout the Coachella Valley are provided through the Coachella Valley Groundwater Basin. The Coachella Valley Groundwater Basin extends from Whitewater, in the San Geronio Pass, southeastward to the Salton Sea, and underlies the cities of Palm Springs, Cathedral City, Rancho Mirage, Palm Desert, Indian Wells, La Quinta, Indio, Coachella, and the unincorporated communities of Thousand Palms, Thermal, Bermuda Dunes, Oasis, and Mecca. The Basin is bounded by non-water bearing crystalline rocks of the San Bernardino and Little San Bernardino Mountains in the north, the Santa Rosa and San Jacinto Mountains on the west and southwest, the Mecca Hills to the east, and the northwest shoreline of the Salton Sea to the southeast.<sup>5</sup>

Groundwater flow throughout the Basin is limited by fault barriers, constrictions in the basin, and areas of low permeability. As a result, the Coachella Valley Groundwater Basin is divided into four subbasins, including the Desert Hot Springs Subbasin, Garnet Hill Subbasin, Mission Creek Subbasin, and the Whitewater Subbasin. In 1964, DWR estimated that these four subbasins contained a total of approximately 39.2 million acre-feet of water in the first 1,000 feet below the ground surface, much of which originated from runoff from adjacent mountains.<sup>6</sup>

#### Aquifer Adjudication<sup>7</sup>

The Coachella Valley Groundwater Basin is not an adjudicated basin, and there are no legal agreements limiting CVWD's pumping from the Basin. CVWD shares a common groundwater source with other PWSs, including Desert Water Agency (DWA), the Mission Springs Water District (MSWD), the City of Coachella, the City of Indio, and the Myoma Dunes Mutual Water Company. Other groundwater users include some individual residents, farmers, golf courses, businesses, and commercial facilities.

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<sup>5</sup> "Coachella Valley Groundwater Basin, Indio Subbasin; California's Groundwater Bulletin 118", prepared by DWR, February 27, 2004.

<sup>6</sup> CVWD 2010 Draft UWMP

<sup>7</sup> "Coachella Valley Groundwater Basin, Indio Subbasin; California's Groundwater Bulletin 118", prepared by DWR, February 27, 2004.

Although the Coachella Valley Groundwater Basin is not adjudicated, the Whitewater Subbasin has been divided into two management areas, including the Upper Whitewater River Subbasin Area of Benefit (AOB) and the Lower Whitewater River Subbasin AOB. The dividing line separating these two areas is an irregular line trending northeast from Point Happy in La Quinta to the Indio Hills, located north of Indio. The Upper Whitewater River Subbasin AOB is jointly managed by CVWD and DWA under the terms of the 1976 Water Management Agreement. The Lower Whitewater River Subbasin AOB is managed by CVWD. DWA and CVWD jointly operate a groundwater replenishment program whereby qualifying groundwater pumpers<sup>8</sup> within each service area pay a per acre-foot fee that is used to pay the cost of importing water and recharging the aquifer.

#### Whitewater Subbasin<sup>9</sup>

The Whitewater Subbasin, also known as the Indio Subbasin in Bulletin 118, encompasses approximately 400 square miles in the Coachella Valley. The Subbasin begins at the junction of I-10 and Highway 111 in the north, and extends seventy miles southeastward to the Salton Sea. The Subbasin is bordered on the southwest by the Santa Rosa and San Jacinto Mountains, on the north by the Garnet Hill, Mission Creek, and Desert Hot Springs Subbasins, and on the east by the Garnet Hill and San Andreas faults. Groundwater flow between the Whitewater Subbasin and surrounding subbasins is impeded by these faults. The Whitewater River is the main surface water feature in the Whitewater Subbasin, and provides natural recharge to the Basin. The Whitewater River flows southeastward from the western portion of the Subbasin, near the San Geronimo Pass, to the Salton Sea. Groundwater flows also move from northwest to southeast.

The Whitewater Subbasin is made up of water-bearing materials, including unconsolidated late Pleistocene and Holocene alluvial deposits. These deposits make up what is known as the Ocotillo Conglomerate Formation, which are primary water-bearing units of poorly bedded coarse sand and gravel. Ocotillo Conglomerate Formation is greater than 1,000 feet thick in many portions of the Subbasin.

Natural recharge in the Whitewater Subbasin is estimated at 49,000 acre-feet per year, and can range from 187,000 acre-feet per year during wet years, and 10,000 acre-feet per year in dry years. According to the CVWD UWMP, natural recharge in the Upper Whitewater River portion of the Whitewater Subbasin was 49,000 acre-feet in 2009, and natural recharge in the Lower Whitewater River was 33,700 acre-feet. Total inflows are estimated at 392,000 acre-feet per year, and outflows are estimated at 465,800 acre-feet per year. Outflows from water production alone in 2009 were 358,713 acre-feet.<sup>10</sup>

#### Thermal Subarea<sup>11</sup>

The Whitewater Subbasin is further divided into four subareas, including Palm Springs Subarea, Thousand Palms Subarea, Oasis Subarea, and Thermal Subarea. The City of La Quinta overlies the Thermal Subarea. The Whitewater Subbasin has a total of approximately 28.8 million acre-feet of groundwater storage capacity. Approximately 67%, or 19,400,000 acre feet of storage capacity exists within the Thermal Subarea.

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<sup>8</sup> Pumpers that are not considered minimal pumpers per CVWD and DWA.

<sup>9</sup> "Coachella Valley Groundwater Basin, Indio Subbasin; California's Groundwater Bulletin 118", prepared by DWR, February 27, 2004.

<sup>10</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

<sup>11</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

The Thermal Subarea is divided into two parts, including the upper and lower portions of the Whitewater Subbasin. The upper part of the basin underlies the cities of Palm Desert and Rancho Mirage, and is unconfined due to unconsolidated alluvial deposits, which allow for greater percolation into the groundwater basin. The lower portion of the subbasin, which begins near Point Happy, is mostly confined due to silt and clay layers from ancient lake beds. Percolation rates, therefore, are lower in the southeastern portion of the Thermal Subarea.

#### Groundwater Summary

The City of La Quinta overlies the lower portion of the Whitewater Subbasin and receives water from wells within the Whitewater Subbasin. DWR's 1964 estimate showed approximately 73%, or 28.8 million acre-feet of groundwater was stored in the Whitewater Subbasin. However, the amount of water in the aquifer has decreased over the years due to the extraction of groundwater supplies used to serve urban, rural, and agricultural development in the Coachella Valley, which has resulted in the rate of extraction exceeding the natural rate of recharge, a condition known as overdraft.<sup>12</sup>

#### **4.1.2 STATUS OF THE AQUIFER**

The Coachella Valley has historically been dependent on groundwater as a source of water supply. Inflows of groundwater are produced from natural runoff from precipitation and returns from groundwater use, as well as artificial recharge from imported SWP and Colorado River water. Groundwater outflows result from pumping, flows to the agricultural drainage system, evapotranspiration by vegetation, and subsurface outflows to the Salton Sea. Demand for groundwater in the Whitewater Subbasin continues to exceed natural recharge of the groundwater basin leading to overdraft. As stated in DWR's Bulletin 118-80, overdraft is "the condition of a groundwater basin where the amount of water extracted exceeds the amount of groundwater recharging the basin over a period of time."<sup>13</sup>

California Department of Water Resources (DWR) Bulletin 108 published in 1964 and Bulletin 118 (2003) are DWR's most current bulletins that characterize the condition of the Whitewater Subbasin aquifer as a whole. According to Bulletin 108, the amount of usable supply in the overdrafted aquifer is decreasing. Bulletin 118 estimated an annual decrease of 33,000 acre-feet of groundwater storage in the Coachella Valley Groundwater Basin between 1953 and 1967. More recent estimates show a decrease of 136,700 acre-feet for the entire basin.<sup>14</sup>

Within the Whitewater Subbasin, CVWD estimates the annual change in storage annually in its Engineer's Reports on Water Supply and Replenishment Assessment. The recent 2010 CVWD WMP also reported on storage loss. The annual loss in storage for the entire Whitewater Subbasin in 2009, as reported in the CVWD WMP, was estimated to be 72,051 acre-feet. This includes a 23,912 acre-feet loss in storage for the Lower Whitewater River Subbasin and 48,139 acre-feet loss in the Upper Whitewater River Subbasin. The 2009 loss in storage was lower than historical loss due to increased SWP Exchange water deliveries at Whitewater River Recharge Facility and increased Canal water recharge at the Thomas E. Levy Groundwater Replenishment Facility (Levy facility)<sup>15</sup> in the East Valley beginning in 2009.

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<sup>12</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

<sup>13</sup> CVWD UWMP, 2010

<sup>14</sup> "Coachella Valley Groundwater Basin, Indio Subbasin; California's Groundwater Bulletin 118", prepared by DWR, February 27, 2004.

<sup>15</sup> Previously known as the Dike-4 facility.



The cumulative overdraft of the Upper and Lower Whitewater River Groundwater Basin is estimated to be 5.42 million acre-feet from 1973 through 2009, with the Lower Whitewater Subbasin making up the majority at 4,490,152 acre-feet of overdraft. The Upper Whitewater Subbasin has a cumulative overdraft of approximately 928,860 acre-feet. The overdraft condition of the Aquifer has caused groundwater levels to decrease in portions of the Lower Valley (from La Quinta to the Salton Sea) and has raised concerns about water quality and land subsidence.

Groundwater levels in the basin have decreased substantially, except in areas where artificial recharge has successfully raised water levels (i.e., adjacent to and down gradient of the Whitewater Spreading Facility). Areas near the edges of the Valley where the aquitard is absent allows for direct recharge to the lower aquifer (located below the clay layers that create the semi-perched groundwater zone) as demonstrated by the Levy Facility and Martinez Canyon Recharge Programs. The Martinez Canyon recharge facility is a pilot project and has been underway since 2005. Upon completion of a full-scale facility, the facility is expected to recharge 20,000 to 40,000 AFY on average. The Martinez Canyon facility is projected to start initial operation in 2016 and is expected to reach full capacity by 2018.<sup>16</sup>

#### **4.1.3 OVERDRAFT MITIGATION EFFORTS**

CVWD takes a proactive role in addressing overdraft conditions through region wide planning efforts and the development and implementation of specific programs, policies and incentives. The following discussion provides an overview of CVWD's overdraft mitigation efforts as presented in the WMP and landscaping ordinance, and examples of successful programs that have been implemented to date.

##### 4.1.3.1 Coachella Valley Water Management Plan

As outlined in Section 2.3, CVWD has developed the CVWMP to comprehensively protect and augment the groundwater supply. The previous 2002 CVWMP developed water management plan strategies to address increasing demands within the Coachella Valley and eliminate overdraft. Water management strategies called out in the 2002 Plan included water conservation, development of additional water sources, source substitution and groundwater recharge. Since the 2002 Plan was adopted, increasing demands coupled with reduced reliability of imported water supplies have increased the potential for future groundwater supply deficits. These new issues are addressed in the 2010 WMP Update. The goal of the 2010 WMP remains the same as the 2002 Plan, but has been modified to reflect a more holistic approach: "to reliably meet current and future water demands in a cost-effective and sustainable manner."

The 2010 WMP Update incorporates a more flexible and adaptive approach to water resources management. In addition to the elements considered in the 2002 WMP, the 2010 WMP Update considers and evaluates additional management options, as well as potential water quality improvements. There have been ongoing concerns regarding the salinity of Colorado River water. Water management elements that have been considered in the development of the 2010 WMP Update include water conservation, additional water supplies, source substitution, groundwater recharge, water quality protection and other water management activities. Many of these elements can be implemented to varying degrees in response to future needs.

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<sup>16</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

A major component of the 2010 WMP water management efforts is water conservation. The 2010 CVWMP abides by the new SB 7x7 legislation passed in 2009, which calls for a 10% reduction in water use by 2015 and 20% reduction by 2020. In addition, the Plan also provides examples of more stringent conservation levels that could be used in the Coachella Valley. The Plan highlights conservation levels used by other desert cities, such as Phoenix and Tucson, which have even higher conservation levels. Tucson's per capita water use is 177 gallons per capita day, which is a 50% demand reduction over SB 7x7 regulations. These higher conservation levels could lead to additional urban water conservation savings between 43,000 AFY to 266,000 AFY by 2045.

#### 4.1.3.2 CVWD Landscape Ordinance

In 2003, CVWD adopted Landscape Ordinance No. 1320 requiring a 25 percent reduction in outdoor water use over DWR's model ordinance. Amendments to the ordinance occurred in 2007, requiring new developments to install weather-based irrigation controllers that automatically adjust water allocation, setbacks of spray emitters from impervious surfaces, use of porous rock and gravel buffers between grass and curbs to eliminate run-off onto streets, and requiring all landscaping, with the exception of turf, to be irrigated with a drip system. The 2007 Ordinance also called for an additional 17 percent reduction in outdoor use for new development (CVWD Ordinance No. 1302-1, 2007). In 2009, Coachella Valley cities, water districts, Riverside County and CVAG developed a single model landscape ordinance to promote maximum landscape water use efficiency (CVWD Ordinance No. 1302-2, 2009). The 2009 Ordinance is similar to the 2007 Ordinance, but provides uniform landscaping standards throughout the Coachella Valley. The La Quinta Landscape Ordinance is modeled off of CVWD's 2009 Ordinance.

The 2009 Ordinance is one of the most stringent in the State. One of the new features of the ordinance is turf limitations for new golf courses. New golf courses turf limitations include limiting turf to 4 acres per hole, plus 10 acres for associated practice areas, such as driving ranges and putting greens. Therefore, golf courses would be limited to 82 acres of turf for an 18 hole course. A typical 18-hole golf course could achieve an average annual water savings of 200 acre-feet for new golf course development or any rehabilitation of existing golf courses.

#### 4.1.3.3 Source Substitution

Source substitution is the use of an alternate source of water in place of groundwater. The use of an alternate water source reduces groundwater extraction and allows the groundwater to remain in storage, thus reducing overdraft. Alternative sources of water include municipal recycled water, Colorado River water, desalinated agricultural drain water, and re-use of aquaculture water.

Source substitution projects described in the 2010 WMP include the following:

- Conversion of existing and future golf courses from groundwater to recycled water or Colorado River water;
- Conversion of urban use from groundwater to treated Colorado River water in the East Valley
- Conversion of outdoor urban use to Colorado River water or recycled water in the East Valley; and
- Conversion of agricultural irrigation from groundwater to Colorado River water, primarily in the Oasis area.

Examples of effective alternative source substitute efforts include the following:

- CVWD has a recycled water system that treats water from three water reclamation plants and delivers to golf courses, schools, and open spaces for irrigation. It is estimated that 8,200 acre-feet of recycled water per year is available.
- An additional recycled water use in the East Valley is indirect potable reuse (IPR). IPR is the planned use of highly treated wastewater to directly augment water supplies.
- CVWD has constructed the Mid-Valley Pipeline (MVP) to deliver Colorado River water to the Mid-Valley area for use with CVWD's recycled water for golf course and open space irrigation. Construction of the first phase, from the Coachella Canal to WRP-10, was completed in 2009, and later phases will expand the MVP to 50 golf courses in the Rancho Mirage-Palm Desert-Indian Wells area.
- CVWD has secured rights to the Colorado River water and participated in the construction of the All-American Canal and the Coachella Branch of the All-American Canal. As of 2010, CVWD receives 368,000 acre-feet per year of Colorado River deliveries under the QSA.
- CVWD operates the Levy Groundwater Replenishment Facility, which has an estimated average recharge capacity of 40,000 acre-feet per year. The Martinez Canyon Recharge Facility is a second recharge facility currently in the trial phase. Once completed, the Martinez Facility is expected to recharge 20,000 to 40,000 acre-feet per year.
- CVWD has secured rights to SWP Water and negotiated exchange and advanced delivery agreements with the Metropolitan Water District of Southern California (MWD) to exchange CVWD's SWP Water for MWD's Colorado River Water source. The SWP exchange water is used to recharge the Aquifer in the Upper Valley. This recharge program was started in 1972 and has replenished the Aquifer with over two million acre-feet of water. CVWD receives 88,100 AFY of Metropolitan's SWP Table A water.
- CVWD plans to utilize treated agricultural drainage water for irrigation purposes. A desalination pilot study was completed in 2008. A full-scale desalination facility will have a 10 MGD capacity that will produce approximately 11,000 acre-feet per year (7.5 MGD) of product water.
- CVWD has worked with an aquaculture farm and developed water efficiency programs that include water treatment and reuse. Historically, the amount of fish farm effluent recycled in the East Valley was approximately 2,000 AFY. Recent termination of one of largest fish farms in the East Valley has occurred, and the facility is now being used to grow algae for the production of biofuel. This conversion has significantly reduced groundwater pumping as well as eliminated a source of reusable aquaculture effluent.

#### 4.1.3.4 Conservation Programs

CVWD is working with the cities and counties in its service area to limit the amount of water that can be used for outdoor landscaping. As discussed earlier, CVWD's 2009 Landscape Ordinance provides uniform landscaping standards throughout the Coachella Valley.

As a result of the adoption of state-wide indoor water conservation measures requiring low flush toilets, shower and faucet flow restrictors and other devices, the amount of water used inside homes has been significantly reduced. With the large number of new homes constructed, these conservation programs have reduced impacts of new development on the Aquifer. Recent passage of SB 7x7 legislation in 2009 now requires that public water suppliers achieve a 10% reduction in water use by 2015 and 20% reduction by 2020.

These measures include water efficient landscaping and irrigation controls, water efficient plumbing, tiered or seasonal water pricing, public information and education programs, alternative water supplies, water restrictive municipal development policies, appointing a CVWD conservation coordinator, and refining the maximum water allowance budgets for landscaped and recreational areas.

CVWD's long term plan to conserve groundwater reserves involves water conservation across all land uses, as well as increased utilization of additional water resources such as more Colorado River water, SWP water, recycled water, and desalinated agricultural drain water.

## **4.2 ADDITIONAL WATER SOURCES**

### **4.2.1 SURFACE WATER**

Surface water supplies come from several local rivers and streams, including the Whitewater River, Snow Creek, Falls Creek and Chino Creek. In 2009, surface water supplied less than one percent of the total water supply to the West Valley for urban and golf course needs. There was no surface water supplied to the East Valley. Because surface water supplies are affected by variations in annual precipitation, the annual supply is highly variable. Since 1936, the estimated historical surface water supply has ranged from approximately 1,400 to 9,000 acre-feet per year, averaging about 5,800 AFY.<sup>17</sup>

### **4.2.2 RECYCLED WATER**

Wastewater that has been highly treated and disinfected can be reused for landscape irrigation and other purposes; treated wastewater is not suitable for potable use. Recycled wastewater has historically been used for irrigation of golf courses and municipal landscaping.

CVWD operates six water treatment plants, three of which generate recycled irrigation water for golf courses and large landscaped areas. The water reclamation plant (WRP) used by the City of La Quinta is WRP-4, which is located approximately 2.0 miles east Mecca. WRP-4 became operational in 1986 and serves communities from La Quinta to Mecca. WRP-4 currently does not recycle effluent, however it may provide future recycled supplies when the demand for recycled water develops and tertiary treatment is constructed.<sup>18</sup>

Recycled water use is currently limited to irrigation of golf courses and large urban landscapes. In 2010 approximately 8,380 acre-feet of recycled water was used for these purposes. As projected in the UWMP, by 2035 31,380 acre-feet of recycled water is expected to be available for irrigation of crop lands, golf courses, and landscaped area. Shifting the water source from groundwater to recycled water for irrigation is a central strategy of the UWMP. As such, it is recommended that the La Quinta General Plan incorporate policies and programs that support the use of recycled water for irrigation.

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<sup>17</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

<sup>18</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

### **4.2.3 DESALINATED WATER**

Desalination involves the removal of some amount of salts and other minerals from water. The removal process converts a high salinity water source to a water source that is suitable for consumption or non-potable uses, depending on the level of treatment. Desalination requires specialized equipment and infrastructure, and energy demands for the desalination process are extremely high. Therefore, the financial requirements associated with desalination are often prohibitive.

#### Desalination of Drainage Water

CVWD plans to collect and treat agricultural drainage water from the shallow, semi-perched groundwater zone for reuse. The underground agricultural drain system consists of nearly 2,500 miles of on-farm drains and pipelines that collect and convey agricultural water runoff. The 2002 WMP recommended that a drain water desalination facility commence operation between 2010 and 2015 with a 4,000 AFY facility. The facility would be expanded to 11,000 AFY capacity by 2025. Product water would be desalted to a quality equivalent to Colorado River and delivered to the Canal distribution system for non-potable use such as irrigation.

In 2008 the Malcolm-Pirnie pilot study and feasibility study was conducted to assess a variety of treatment technologies and brine management approaches. The Study found that the reverse osmosis with dew evaporation technique was the preferred treatment approach and recommended that brine management be accomplished via conveyance to constructed wetlands at the north shore of the Salton Sea. The Study estimated that desalination costs could range from \$480 to \$740 per acre-foot depending on the capacity of the facility and may be as much as \$1,200 per acre-foot under the zero liquid discharge alternative.

#### Desalination of Ocean Water

Since the Coachella Valley is located approximately 200 miles from the Pacific Ocean, exchange of desalinated seawater, rather than direct use, may be feasible. Given the substantial amount of conveyance infrastructure required for seawater desalination, participation in multiple desalination projects via exchange programs may be pursued. In the 2010 WMP, CVWD assumes that up to 100,000 acre-feet per year of desalinated seawater might be available for exchange. The cost of seawater desalination is estimated to range from \$1,000 to \$2,000 per acre-foot.

## **4.3 IMPORTED WATER SUPPLIES**

### **4.3.1 COLORADO RIVER WATER**

The Coachella Canal is a branch of the All-American Canal, which brings Colorado River water into the Coachella Valley and Imperial County. The service area for Colorado River water delivery under CVWD contract with the U.S. Bureau of Reclamation is defined as Improvement District No. 1 (ID-1). Under the 1931 California Seven Party Agreement, CVWD has water rights to Colorado River water as part of the first 3.85 million acre feet allocated to California. CVWD is in the third priority position along with the Imperial Irrigation District (IID). This priority is ahead of the 550,000 acre-feet allocation to the Metropolitan Water District of Southern California.



California's Colorado River water supply is protected by the 1968 Colorado River Basin Project Act, which holds that the Colorado River water supplies to Arizona and Nevada developed after 1968 shall be reduced to zero before California's allocation is reduced below 4.4 million acre feet in any year. Historically, CVWD has received approximately 330,000 acre-feet annually of Priority 3a Colorado River water. This source of water is considered reliable through execution of the 2003 Quantification Settlement Agreement (QSA) among some of the California Colorado River contractors.

The QSA was entered into and between CVWD, Imperial Irrigation District (IID), and the San Diego County Water Authority (SDCWA). The QSA quantifies CVWD's Colorado River water rights for the next 75 years. Under the QSA, CVWD will be allocated up to 459,000 acre-feet per year of Colorado River water as shown in Table 19.

<b>Table 19</b> <b>CVWD DELIVERIES UNDER THE QUANTIFICATION SETTLEMENT AGREEMENT</b>		
<b>Component</b>	<b>2010 Amount (AFY)</b>	<b>2026 Amount (AFY)</b>
Base Allotment	330,000	330,000
1988 MWD/IID Approval Agreement	20,000	20,000
Coachella Canal Lining (to SDCWA)	-26,000	-26,000
To Miscellaneous/Indian PPRs	-3,000	-3,000
IID/CVWD First Transfer	12,000	50,000
IID/CVWD Second Transfer	0	53,000
MWD/SWP Transfer	35,000	35,000
<b>Total Diversion at Imperial Dam</b>	<b>368,000</b>	<b>459,000</b>
Less Conveyance Losses <sup>1</sup>	-31,000	-31,000
<b>Total Deliveries to CVWD</b>	<b>337,000</b>	<b>428,000</b>
Source: CVWMP Table 4-2 CVWD Deliveries under the QSA, December 2010.		
<sup>1</sup> Assumed losses after completion of canal lining projects.		

#### 4.3.2 STATE WATER PROJECT (SWP) WATER

CVWD and DWA are SWP contractors for the Whitewater River Basin. The SWP includes 660 miles of aqueduct and conveyance facilities extending from Lake Oroville in the north to Lake Perris in the south. The SWP has contracts to deliver water supplies annually to 29 agencies.

CVWD's original SWP water right (Table A amount) was 23,100 acre-feet per year and DWA's original SWP Table A amount was 38,100 acre-feet per year, for a combined Table A amount of 61,200 acre-feet per year. In 2004, CVWD purchased an additional 9,900 acre-feet per year of SWP water from the Tulare Lake Basin Water Storage District, which brought CVWD's SWP allotment to 33,000 acre-feet per year.

In addition, CVWD and DWA have also negotiated an exchange agreement with MWD for 100,000 acre-feet of SWP Table A amount. MWD has permanently transferred 88,100 acre-feet per year and 11,900 acre-feet per year of its SWP Table A amounts to CVWD and DWA, respectively. This agreement provides that CVWD and DWA generally receive this water from the SWP during wet years, which allows the two agencies to recharge the groundwater basin and operate a conjunctive use program, storing water in wet years and pumping the groundwater basin in dry years.

In 2007, CVWD and DWA made a second purchase of SWP water from the Tulare Lake Basin Water Storage District. CVWD purchased 5,250 acre-feet per year and DWA purchased 1,750 acre-feet per year. Also in 2007, CVWD and DWA completed the transfer of 12,000 acre-feet per year and 4,000 acre-feet per year, respectively, from the Berrenda Mesa Water District for a total Table A amount of 16,000 acre-feet annually. Therefore, the total SWP Table A amount for CVWD and DWA is 194,100 acre-feet per year, with CVWD's portion equal to 138,350 acre-feet per year. Table 20 summarizes CVWD and DWA total maximum allocations of Table A SWP water.

<b>Table 20</b> <b>Coachella Valley State Water Project Water Table A Allocation</b> <b>(ac-ft/yr)</b>						
	<b>Original SWP Table A</b>	<b>Tulare Lake Basin Transfer #1</b>	<b>Tulare Lake Basin Transfer #2</b>	<b>Metropolitan Water District Transfer</b>	<b>Berrenda Mesa Transfer<sup>1</sup></b>	<b>Total</b>
<b>CVWD</b>	23,100	9,900	5,250	88,100	12,000	138,350
<b>DWA</b>	38,100	-	1,750	11,900	4,000	55,750
<b>Total</b>	<b>61,200</b>	<b>9,900</b>	<b>7,000</b>	<b>100,000</b>	<b>16,000</b>	<b>194,100</b>
Source: CVWD 2010 Draft UWMP.						

CVWD purchases Table A amounts from SWP contractors as they become available and meet CVWD's needs. Additional purchases from the SWP and others with water rights, mainly in the Central Valley of California, will be evaluated as they become available to determine whether they meet CVWD's needs. If they do, CVWD may purchase additional SWP water rights.

Water purveyors make annual requests to the DWR for SWP water allocations and the Department makes an initial SWP Table A allocation for planning purposes, typically in the last month before the next water delivery year. Throughout the year, as additional information regarding water supplies becomes available to DWR, its allocation/delivery estimates are updated.

The following table outlines the historic reliability of SWP deliveries, including initial and final allocations for since 1987.

<b>Table 21</b> <b>DWR Table A Water Allocations</b> <b>(1987 – 2011)</b>		
<b>Year</b>	<b>Initial Allocation</b>	<b>Final Allocation</b>
1987	100%	100%
1988	100%	100%
1989	100%	100%
1990	100%	100%
1991	85%	30%
1992	20%	45%
1993	10%	100%
1994	50%	50%
1995	40%	100%
1996	40%	100%
1997	70%	100%
1998	40%	100%
1999	55%	100%
2000	50%	90%
2001	40%	39%
2002	20%	70%
2003	20%	90%
2004	35%	65%
2005	40%	90%
2006	55%	100%
2007	60%	60%
2008	25%	35%
2009	15%	40%
2010	5%	50%
2011*	25%	70%
<b>Average</b>	<b>48%</b>	<b>77%</b>
Source: California DWR, Water Contract Branch within the State Water Project Analysis Office, Notices to State Water Contractors, 1987 – 2010.		
* Latest update for 2011 was posted on March 15, 2011.		

As noted previously, CVWD and DWA do not directly receive SWP water. Rather, CVWD and DWA have entered into an exchange agreement with MWD that allows MWD to take delivery of CVWD's and DWA's SWP Table A water. In exchange, MWD provides an equal amount of Colorado River water that MWD transports through its Colorado River Aqueduct, which crosses the Coachella Valley near Whitewater. The exchange agreement allows for advanced delivery and storage of water, thereby providing better and more efficient water management. As a result, water is not recharged every year, but is recharged during year when SWP and surplus waters are available. The large storage capacity of the Aquifer and the large volume of water in storage allow CVWD and DWA to pump from the Aquifer for a number of years without recharging and to recharge large amounts of water to refill the Aquifer when surplus water is available.



#### Spot Purchases and Permanent Water Purchases

CVWD and DWA also purchase additional water from the SWP as available. Purchase of additional SWP water may involve purchases on the spot market, Pool A, B, and Interruptible water, as well as the purchase of additional long-term supplies of Table A water. Since 2002 over 6,100 acre-feet has been purchased from the spot market.<sup>19</sup>

CVWD purchases Table A amounts from SWP contractors as they become available and meet CVWD's needs. Additional purchases from the SWP and from others with water rights, mainly in the Central Valley of California, will be evaluated as they become available to determine whether they meet CVWD's needs. CVWD may purchase additional SWP water rights should a suitable opportunity arise.

#### **4.4 SUMMARY OF WATER RESOURCES**

In addition to urban water demands, CVWD's service area also generates non-potable water demands for groundwater recharge and use. Table 22 below shows the total projected water demands for the CVWD service area through 2035.

<b>Table 22</b> <b>Total Projected Water Use CVWD Service Area</b> <b>(Acre-Feet)</b>					
	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Total Urban Water Use	125,800	156,100	187,700	212,000	242,700
Groundwater recharge	131,200	148,500	158,700	159,400	163,100
Non-potable Water Use	339,000	319,400	314,200	299,400	283,600
<b>Total</b>	<b>596,000</b>	<b>624,000</b>	<b>660,600</b>	<b>670,800</b>	<b>689,400</b>
Source: CVWD UWMP Table 4-7 CVWD Future Groundwater Production					

Table 23 shows CVWD's existing water supply entitlements, rights, and service contracts.

<b>Table 23</b> <b>CVWD Water Supplies</b> <b>(Entitlements, Rights, and Water Service Contracts)</b>						
<b>Supply</b>	<b>Supplies acre-feet/year</b>	<b>Entitlement</b>	<b>Right</b>	<b>Contract</b>	<b>Other</b>	<b>Ever Utilized</b>
Groundwater	Unspecified <sup>1</sup>				X	Yes
Colorado River	459,000 <sup>2</sup>			X		Yes
SWP Exchange	138,350 <sup>3</sup>	X				Yes
1. CVWD shares a common groundwater source with DWA that has not been adjudicated. 2. As set forth in the QSA between IID, MWD, and CVWD, October 2003. (See Table 5 above) 3. Includes Original Table A amount, Tulare, Berrenda Mesa and MWD Agreements. (See Table 20 above)						

<sup>19</sup> CVWD WMP 2010.

#### 4.4.1 WATER SUPPLY FOR LA QUINTA GENERAL PLAN

As described above, CVWD utilizes a number of water sources to meet water demands for its service area. For the City of La Quinta and the Sphere of Influence, CVWD provides groundwater as the primary water supply and, as feasible, uses imported Colorado River water for irrigation.

#### 4.5 WATER SUPPLY RESOURCES PROJECTED

The UWMP projects that the percentage of water from each of the current water supply sources will change significantly by 2035 relative to 2005 conditions. Table 24 below shows the projected water supplies that will be utilized to be meet demands for the CVWD service area through 2035. Sources other than groundwater constitute 47% of the water supply that will be utilized to meet urban water demands in 2035.

<b>Table 24</b> <b>Projected Urban Water Sources CVWD</b> <b>(Acre-Feet)</b>					
<b>Water Use</b>	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>
Groundwater	118,700	125,600	129,900	133,500	128,700
Treated Colorado River	5,700	19,300	31,400	39,500	49,100
Untreated Colorado River	1,300	11,100	26,300	39,000	54,800
Desalinated Ag. Drain	0	0	0	0	10,000
<b>Total</b>	<b>125,800</b>	<b>156,100</b>	<b>187,700</b>	<b>212,000</b>	<b>242,700</b>
Source: CVWD UWMP Table 4-1 CVWD Future Water					

#### 4.5.1 WATER SUPPLY RELIABILITY

Table 25 below, illustrates the assumptions associated with the projected water supply reliability for each water resources available to the CVWD service area. See Appendix B for information on recent litigation that may affect delivery of SWP supplies or Colorado River Water.

<b>Table 25</b> <b>CVWD Projected Supply Reliability by Source</b>					
<b>Supply Sources</b>	<b>Normal Water Year</b>	<b>Single Dry Year</b>	<b>Multiple Dry Years</b>		
			<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
Groundwater	100%	100%	100%	100%	100%
Colorado River Water	100%	100%	100%	100%	100%
Recycled Water	100%	100%	100%	100%	100%
SWP Water <sup>1</sup>	50%	11%	34%	35%	36%
Desalinated Drain Water	100%	100%	100%	100%	100%
1 Consistent with DWR SWP 2009 Delivery Reliability Report for Single and Multiple Dry Years. CVWD assumes that 50% of SWP supplies are available during normal years.					

### State Water Project

DWR issues the State Water Project Delivery Reliability Report every two years, with the 2009 version being the most recent. The 2009 Report accounts for variability in water delivery reliability from climate change and federal litigation regarding listed fish species. The Final DWR 2009 Reliability Report, projects that future SWP Table A deliveries through 2029 will average 60% of Table A Allocation under normal year conditions, 11% under single dry year conditions, and 34-36% under multiple dry year conditions.<sup>20</sup> This percentage of allocations is based on computer modeling of the state's watersheds, past hydrology adjusted for climate change, recent federal litigation, and conditions of the State's river and reservoir systems.

The CVWD UWMP accounted for uncertainty in modeling restriction, risk of levee failure in the delta, additional pumping restriction, ongoing litigation, and potential impacts of climate change. As such, the CVWD UWMP assumes a more conservative long-term delivery reliability average of 50% in the absence of a successful Bay Delta Conservation Plan.

### Colorado River Water

Reliability of the Colorado River water supply is dependent upon the availability of this source, which may be affected by precipitation levels and recent litigation challenging the QSA. See Appendix B.

In January 2010, the QSA was rendered invalid in a state court decision (Superior Court of California, 2010), and was subsequently issued a temporary stay from the California Court of Appeals (Case Number C064293; to be heard on February 14, 2011).<sup>21</sup>

As described above, the use of Colorado River water for domestic purposes is projected to increase substantially by 2035. Determining the best way to treat this water in order to substitute for and decrease the area's dependency on groundwater is an important objective of the CVWD UWMP. A study of surface water treatment options was conducted by CVWD in order to determine historic and projected Colorado River water quality, establish water quality treatment goals, identify feasible treatment technologies, and assess the compatibility of blending treated surface water with groundwater and the resultant potential for corrosion. In 2008 CVWD finalized the Phase 2 Draft Surface Water Treatment Process Evaluation Report, which investigated treatment options for producing potable quality water from Colorado River water. The Report calls for the treatment and distribution of as much as 32,000 acre-feet of Colorado River water for domestic use annually,<sup>22</sup> and may be ramped up to as much as 92,000 acre-feet per year.<sup>23,24</sup>

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<sup>20</sup> "The State Water Project Delivery Reliability Report 2009," prepared by the California Department of Water Resources, Bay-Delta Office, August 2010.

<sup>21</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

<sup>22</sup> "CVWD Water Management Plan Update: Draft Report", prepared for CVWD, December 2010.

<sup>23</sup> Personal communication with Mark Johnson, CVWD Director of Engineering, September 9, 2008.

<sup>24</sup> "Coachella Valley Water District (CVWD) Domestic Water System (Surface Water) Treatment Plant Design Development Report," prepared by Malcolm Pirnie, Inc., September 2008.

#### 4.5.2 WATER QUALITY

The quality of the groundwater within the Whitewater River Subbasin is dependent on a number of factors, including the source of the water, the type of water-bearing materials in which it occurs, depth, proximity to faults and recharge basins, presence of surface contaminants, well maintenance, and other hydrogeological or cultural factors. The California Regional Water Quality Control Board (CRWQCB), Lahontan Region, implements federal and state laws to assure that water quality standards are met for domestic water systems under the authority of the federal and state Safe Drinking Act.

Planning, management, and enforcement of these laws assure that all urban water served by CVWD meets state and federal water quality standards. The quality of water within the Whitewater River Subbasin and both treated and untreated Colorado River water is described as good in Table 5-13 of the CVWD UWMP. The 2011 Water Quality Report prepared by CVWD shows domestic water quality by service area. Monitoring for certain contaminants has been conducted, and no established thresholds for water quality standards have been exceeded within the CVWD service area.<sup>25</sup>

Emerging groundwater quality issues consist of salinity, arsenic, perchlorate, chromium-6 uranium, nitrate, carcinogens, and endocrine disrupting compounds. Each of these is discussed in detail below.

Colorado River water is used for direct recharge to groundwater reserves and is relatively high in salinity, containing more than one ton of salt (600 o 700 ppm) in every acre-foot of water delivered. Salinity levels at the Whitewater River Recharge Facility range from 530 to 750 mg/L, averaging 636 mg/L since 1973. Colorado River water delivered via the Coachella Canal ranges from 625 to 975 mg/L, with an average concentration of 790 mg/L over the last 60 years. CVWD is evaluating and pursuing several options to limit the concentration of salt in recharge supplies. One option is to directly import SWP supplies via construction of a SWP extension pipeline that would connect to the Whitewater and Mission Creek spreading facilities. SWP supplies typically have an average total dissolved solids concentration of 245 mg/L. Another option is to treat Colorado River water through a desalination process before recharge. As mentioned above, desalination is currently expensive and may be cost prohibitive. CVWD will continue to monitor concentrations in recharge supplies and groundwater. With implementation of the CVWMP, salinity will not affect groundwater supply reliability.

The Water Quality Report notes that, due to the erosion of natural deposits, some low levels of arsenic are periodically detected in the domestic water system. For the City of La Quinta the range of arsenic was not detected to a maximum of 5.7 ug/L. The average arsenic concentration was not detectable. The US EPA researches the effects of arsenic and has found that exposure can cause cancer in humans at high concentrations and is linked to skin damage and circulatory problems. To protect against these potential effects, the Maximum Contaminant Level (MCL) for arsenic has been set 10 ug/L. All domestic water delivered by CVWD was well below this threshold. CVWD will continue to monitor arsenic levels and as needed may relocate, blend or treat groundwater supplies to minimize arsenic concentrations.

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<sup>25</sup> “CVWD 2011 Domestic Water Quality Table,” prepared by CVWD, 2011.

Perchlorate was detected in imported Colorado River water in the 1990s. The perchlorate source was determined to be from the Kerr-McGee plan in Nevada, upstream from Lake Mead. Treatment of perchlorate in 1999 at three different locations in Nevada led to steadily declining perchlorate concentrations in Colorado River water. Treatment has been effective in significantly reducing the concentration of perchlorate to levels below the state reporting level of 2 µg/L. Although perchlorate is no longer a major concern in Colorado River water, CVWD continues to monitor for this contaminant.

In California, chromium-6 is regulated under the 50 µg/L maximum contaminant level for total chromium. The California State's Office of Environmental Health Hazard Assessment (OEHHA) has set forth a Public Health Goal (PHG) of 0.06 µg/L for chromium-6, which is currently being considered by the EPA. The EPA will review latest information and data on chromium-6 as part of its 2011 human health assessment and determine if new standards need to be set. At this time, EPA recommends increased monitoring of chromium-6. Monitoring in the Coachella Valley to date has identified over 100 wells with detectable levels of chromium-6. CVWD will continue to monitor for chromium-6 and blend or treat groundwater to achieve required MCL.

Radon, a byproduct of uranium, is another potential water contaminant that has been detected in low level in CVWD's water supply due to the erosion of naturally occurring deposits. For the City of La Quinta, the range of uranium was not detected to a maximum of 12 picocuries per liter (pCi/L). The average uranium concentration was 4.5 pCi/L within the La Quinta service area. The MCL for uranium has been set 20 pCi/L. All domestic water delivered by CVWD was well below this threshold.

Groundwater quality may also be adversely impacted by long-term discharge from on-lot septic systems. These impacts to groundwater quality are expected to be greatest where septic systems serve large populations in high densities, such as the La Quinta cove community. For the City of La Quinta, the range of nitrate concentration was not detected to a maximum of 40 mg/L. The average nitrate concentration was 7 mg/L within the La Quinta service area. The MCL for nitrate has been set at 45 mg/L. Although domestic water delivered by CVWD was below this threshold, the maximum concentration was approaching the threshold. Nitrates in the groundwater supply are attributed to leaching of fertilizers, animal waste, and natural deposits. Expanding the sewer systems and removing on-lot septic may further limit nitrate accumulation in groundwater reserves.

CVWD also monitors for carcinogens and endocrine disrupting compounds. The EPA is considering a new strategy for addressing such compounds including new water treatment technologies. CVWD will continue to monitor domestic water supplies for carcinogens and endocrine disrupting compounds and incorporate new management strategies as required.

## **5.0 SUMMARY AND CONCLUSIONS**

The Coachella Valley has a vast groundwater reservoir with a total storage capacity of 28.8 million acre-feet of water within the Whitewater River Subbasin. CVWD receives Colorado River water supplies, produces recycled water, and is pursuing additional water resources such as desalinated water supplies. Water demands within the region are generated by urban water users, golf courses, and agriculture. Urban water supplies are met through groundwater production, whereas golf courses and agricultural water demands are largely met through imported Colorado River water via the Coachella Canal and a limited amount of recycled water and groundwater.

The 2010 UWMP and WMP identify potential water conservation savings for urban, agriculture, and golf courses, describe conjunctive use techniques to maximize available water supplies such as increase recharge, use of recycled water, and desalinated water. The UWMP concludes that there are sufficient water supplies available to meet demands throughout the service area in 2035 under normal, single, and multiple dry year scenarios, including municipal, manufacturing, industrial, and agricultural water users.

The 2035 water supply projections show that there are sufficient resources available to meet projected demands. However, the long term trend indicates that water demands will continue to increase with population growth, while new water supply resources become more limited. As such, it is essential that local and regional planning efforts recognize the immediate need to conserve water, develop water efficient land use practices, and maintain water demands at a level that can be met without resulting in overdraft conditions.

With CVWD's management strategy and the ongoing implementation of the CVWMP, the groundwater supply is sufficient to serve the City of La Quinta's urban water demand through build out of the proposed General Plan. In order to be consistent with the goal of the CVWD WMP, the City of La Quinta will need to expand infrastructure and the use of treated and unfiltered Colorado River as appropriate for landscaping and irrigation, and continue to reduce its overall per capita water demand.

The projected water demand associated with the General Plan Planning Area represents approximately 22% of total CVWD water demands in 2035. In CVWD's UWMP and CVWMP, the District included water demand projections for new growth and development within its service area, including development within the City of La Quinta and the Sphere of Influence. Although the level of growth varies depending on the population projections utilized, the targeted per capita water demand set forth by CVWD for 2035 is achievable under the proposed La Quinta General Plan update.

### **5.1 COACHELLA VALLEY WATER DISTRICT SERVICE AREA**

Based on the information, analysis, and findings documented in the UWMP and WMP, there is substantial evidence to support a determination that there will be sufficient water supplies to meet the demands within CVWD's service area through 2035. This is based on the volume of water available in the aquifer, CVWD's Colorado River contract supply, SWP Table A amounts, and rights and contracts to meet future water demand projected to be generated within CVWD's service area. CVWD has committed resources to further implement the primary elements of the CVWMP, which include the purchase of additional water supplies, water conservation, and source substitution.



Over the past several years, CVWD has made significant progress in providing private and public consumers of local water resources with information, technology, training, and incentives that have resulted in water conservation. The CVWMP identifies several water conservation measures with the goal of reducing urban water demand by 15% by 2015 and 20% by 2020. Further water conservation may be realized from 2020 through 2035. These measures include water efficient landscaping and irrigation, water efficient plumbing and appliances, tiered or seasonal water pricing, public information and education programs, alternative water supplies, water restrictive municipal development policies, appointing a CVWD conservation coordinator, and refining the maximum water allowance for landscaped and recreational areas

A central strategy of the 2010 UWMP is to expand the use of Colorado River water and recycled water supplies for irrigation in place of groundwater and to incorporate treated Colorado River water into the domestic water system. As projected, by 2035 Colorado River water will account for 47% of the domestic water supply.

As described in the 2010 CVWD UWMP (Section 5), groundwater reserves, Colorado River water supplies, and other water resources such as recycled water and desalinated agricultural drain water are adequate to meet projected water demands within the CVWD service area including the City of La Quinta and the Sphere of Influence. This includes normal, single, and multiple dry year conditions through 2035 without impacting existing or planned future water users including agricultural, industrial, and manufacturing.

## **5.2 LA QUINTA GENERAL PLAN WATER USE**

As projected herein, assuming Scenario B as described above, the Planning Area will generate an annual water demand of approximately 54,467 acre-feet per year in 2035. Development within City Limits will account for 37,783 acre-feet and the Sphere of Influence will account for 16,684 acre-feet of the water demand. The estimated 2010 water demand within City limits is 31,228 acre-feet and 1,268 acre-feet within the Sphere of Influence. New growth as proposed in the General Plan Update will account for 17% of the build out demand by 2035 within City Limits, and 92% within the Sphere of Influence.

As mentioned above, the water demand estimates assume full occupancy for all land uses. However, La Quinta is a seasonal community with a high quantity of second homes and a 28.5 percent vacancy rate. As such, the water demand projections herein are conservative in that they assume full occupancy year round. Water demand projections for 2035 are also conservative since this analysis assumes that build out of the La Quinta General Plan will occur by 2035. Based on current economic conditions and refined population growth rates, actual build out of the La Quinta General Plan is expected to occur after 2035.

Urban water demands for the Planning Area are currently met through groundwater supplies, however, by 2035 47% of the domestic water system will be comprised of treated Colorado River water. CVWD is currently working on designing and implementing an area-wide water service system, which includes establishing pressure zones for the siting of gravity fed storage tanks, pipeline conveyance system expansion and extension, and development of a water treatment facility that treats Colorado River water to potable standards for the East Valley.

The City of La Quinta has an established water delivery system that is maintained and operated by the CVWD. New development proposed within City Limits is largely infill development that will require limited expansion of water conveyance infrastructure. A portion of the water demands generated by open space recreation within the City limits are currently met through canal water. By 2035 a majority of the water utilized to irrigate open space recreation land uses should be derived from sources other than groundwater, such as Canal water, recycled water, or desalinated drain water. Substituting groundwater for non-potable water sources for irrigation of large scale landscaping, such as open space recreation land uses, will require installation of pipelines to distribute Canal water and expansion of recycled water production and conveyance.

The Sphere of Influence currently lacks sufficient water service infrastructure to provide reliable service to meet projected water demands at build out. In order to assure that water services are available to La Quinta's Sphere of Influence, new infrastructure including water treatment, production wells, storage tanks (reservoirs) and pressure zones for the siting of reservoirs, and transmission mains will need to be developed.

### **5.2.1 GENERAL WATER USE PRINCIPALS**

The City of La Quinta recognizes the importance of water conservation practices and has incorporated water use efficiency principals into the proposed General Plan. The City will assure that all future development adhere to policies that govern water use practices such as building codes, landscaping standards, per capita reduction targets, and fee programs to secure additional water supplies. The following conditions describe the existing standards that must be met:

The City shall continue to require that all new developments use water conserving appliances and fixtures, including low-flush toilets and low-flow showerheads and faucets, as well as the application of water-conserving technologies in conformance with Section 17921.3 of the Health and Safety Code, Title 20, California Administrative Code Section 1601(b), and applicable sections of Title 24 of the State Code.

The City shall coordinate and cooperate with CVWD to ensure City-wide compliance with State Senate Bill x7-7 by implementing programs to reduce per capita urban water use by 10% by year 2015, and 20% reduction by year 2020, including the following: landscaping conversion programs and the smart irrigation control program; and expansion of sustainable water supplies such as tertiary treated water, and encouraging its use for landscape irrigation purposes, especially for irrigating golf courses and other large landscaped areas.

The City shall require that future development in the General Plan Area that meets the definition of a "project," as defined under Water Code Section 10912, provide an adopted Water Supply Assessment in compliance with SB 610 and 221, prior to approval of development plans.



As the largest water demanding component, water conservation realized for irrigation and landscaping can have the greatest impact on reducing the overall water demand. The use of drought tolerant desert plants and efficient irrigation systems can drastically reduce water demands compared to traditional grass lawns and irrigation techniques.

Therefore, all landscape areas shall be irrigated using an automatic climate-based irrigation system that relies primarily on point application or bubblers/drip irrigation to minimize water loss and maximize water application directly to the root zone. Scheduled irrigation of native plants should be viewed as temporary for the initial period of plant growth establishment. Once native plant materials have rooted and are surviving on their own, supplemental water should be minimized. Turf and shrub irrigation will utilize independent delivery systems for optimum water efficiency.

Water conservation for the Planning Area will be achieved through the widespread use of: 1) drip and other efficient irrigation, 2) intelligent irrigation controllers, 3) native and non-native drought-tolerant planting materials, and 4) the use of low flush toilets, water efficient appliances, showerheads, and faucets. Furthermore, every effort should be made to substitute groundwater for other available sources for irrigation demands such as recycled water, Colorado River water, or desalinated drain water.

All new development will participate via the payment of a Supplemental Water Supply Charge (SWSC), which will be used to offset costs associated with purchasing new water supplies and other activities to reduce overdraft conditions in the basin. The SWSC is determined based on the historical water use by each type of development and the cost of purchasing imported water. Through this charge and the conservation methods outlined above, potential impacts on the groundwater basin as a result of the proposed La Quinta General Plan Update are expected to be less than significant.

### **5.2.2 RECOMMENDED MITIGATION**

An Environmental Impact Report (EIR) is being prepared for the La Quinta General Plan, and a broad range of mitigation measures have been included in the EIR to minimize potential impacts on water resources by encouraging water saving designs and water conservation. Development of land uses set forth within the General Plan Update, as well as existing development shall be required to implement the following measures in order to assure the most efficient use of water resources and to meet and maintain the CVWMP goals through 2035:

1. The City shall review and amend its Development Standards to require that all new development demonstrate a reduction of domestic water consumption equivalent to the CalGreen Tier One standards in effect at the time of development.
2. Require project developers to pay the Supplemental Water Supply Charge and other applicable fees for the purpose of buying additional water rights to import water and replenish the basin.
3. Project proponents shall contribute their fair share towards the construction and operation of new CVWD facilities, including wells, reservoirs, pipelines, and recycled water treatment facilities.
4. Project applicants shall be encouraged to utilize onsite grey water systems to fulfill all or a portion of the onsite water demand requirements.
5. The City shall continue to implement its Water Efficient Landscape ordinance by requiring that City and private sector development projects implement water efficient landscaping plans to meet or exceed current water efficiency standards.
6. Native plant materials and other drought-tolerant plants shall be used in all non-turf areas of project landscaping.
7. Large expanses of lawn and other water-intensive landscaped areas shall be kept to the minimum necessary and consistent with the functional and aesthetic needs of the Project, while providing soil stability to resist erosion. The use of turf shall be limited to only the areas necessary to provide play areas for children and other appropriate uses.
8. The installation and maintenance of efficient on-site irrigation systems will minimize runoff and evaporation and maximize effective watering of plant roots. Drip irrigation, smart irrigation controllers, and moisture detectors will be used to the greatest extent practicable to increase irrigation efficiency.
9. The City shall encourage existing development to reduce water consumption over “business as usual.”
10. In conjunction with the Coachella Valley Water District ,as well as independently, the City shall develop programs to allow and encourage the retrofitting of existing water-intensive appliances and irrigation systems in existing development.
11. Golf courses and large expanses of turf shall be irrigated with non-potable water supplies, such as canal water and recycled water as available.
12. The City, in conjunction with CVWD and golf course developments, shall aggressively pursue the expansion of non-potable water supplies for irrigation purposes.

13. The City and Coachella Valley Water District shall review future development proposals that propose to convert agricultural uses to urban development to ensure that non-potable water is used for irrigation purposes, and that new irrigation systems utilize existing agricultural drainage and irrigation water delivery facilities to the greatest extent feasible.
14. To the greatest extent practicable, the City shall require that all new development connect to the community sanitary sewer system.
15. The City shall review and amend its Development Standards and Review Procedures to ensure coordination with the Coachella Valley Water District and to assure that existing sewer service along with the extension of sewer service, is capable of meeting the needs of current and future development.
16. To the greatest extent feasible, the City shall coordinate with the Coachella Valley Water District to encourage the elimination of septic systems where they occur within the City.
17. For future development and redevelopment, project proponents shall confer with CVWD engineers to determine locations of existing drains, easements, and rights-of way.
18. The City shall coordinate with CVWD to establish City specific water demands for existing land uses, that can be used to identify effective water savings programs and target sectors that can further conservation or benefit from water audits and retrofits.

# **APPENDIX A**

## **Water Demand Projections for the La Quinta General Plan**

**Prepared in Support of the  
La Quinta General Plan  
Water Supply Assessment**

Prepared by



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June 22, 2011

## **Water Demand Methodology**

The following describes the methodology, techniques, and assumptions that were utilized in quantifying water demand estimates for all existing and proposed land uses described in the La Quinta General Plan Update (2010). At build out of the General Plan, water demand will increase substantially over the existing water demand within the Planning Area. The analysis considers landscape and potable water demand for all existing and proposed land uses within City limits, the Sphere of Influence, and the overall Planning Area.

Water demand projections at build out of the proposed La Quinta General Plan Update are provided for the following scenarios: a) the business as usual scenario, which assumes that all new development will generate water demands at the same rate as existing development; b) the water efficiency scenario, which assumes that new development adheres to water efficient principals and existing development continues to generate the same level of water demand; and c) the retrofit plus efficiency scenario, which assumes that new development adheres to water efficient principals and existing development is retrofitted to reduce water demands.

### Landscape Water Demand Methodology

Applying an estimated “percentage landscaped area” to the total acres designated for each land use, as described below, provided the proposed “landscape area” for each land use component, which excludes impervious surfaces. The total estimated acreage that will require irrigation for landscaping purposes was then multiplied by the estimated Maximum Applied Water Allowance (MWA) in order to calculate the total water demand.

The Maximum Water Allowance is determined pursuant to CVWD's Landscape Ordinance No 1302.1 and is dependent upon the localized evapotranspiration (ET<sub>o</sub>). Several (ET) zones are defined for the Coachella Valley and account for differences in transpiration rates for plants, which vary depending on the location. For example, transpiration rates in cove areas adjacent to hillsides along the Valley's margins have a lower ET rate compared to transpiration rates on the more exposed valley floor, since the former tend to be better shaded and protected from high winds. La Quinta contains several ET<sub>o</sub> Zones within its Planning Area. In order to capture a reasonable water allowance for existing and new development within in the Planning Area, Zone 3a and 4 ET<sub>o</sub> rates were utilized, respectively.



### Potable Water Demand Methodology

Potable water demand for proposed development within the Planning Area was calculated for all indoor uses based on estimates from the American Water Works Association Research Foundation (AWWARF). For residential land uses, the number of occupied dwelling units<sup>1</sup> was multiplied by the household population size of 2.53 people per dwelling unit for City Limits and for the Sphere of Influence.<sup>2</sup> The total population was then multiplied by the AWWARF per capita factor for indoor use: 69.3 gallons per day per person under business as usual conditions,<sup>3</sup> or 55.4 gallons per day per person under more efficient water use conditions.<sup>4</sup>

Indoor potable demand for non-residential land uses was multiplied by the appropriate AWWARF water demand factor. AWWARF figures for non-residential uses are presented as a range depending on the level of efficiency. Square footages for commercial land uses are from the Land Use Table for the General Plan Update and assume 22% area coverage for buildings. The same coverage assumption was used to estimate the square footage associated with Major Community Facilities.

### **Existing BAU and New Development Efficiency (Scenario B)**

The following describes the approach utilized to estimate the water demand associated with build out of the preferred alternative under the conditions that existing land uses maintain current water demands and new development adhere to the most recent water efficiency standards.

### **Existing Water Demand**

Existing water demand is generated from residential, commercial, and recreational open space land uses. Existing development within the La Quinta General Plan Planning Area that generate a water demand include the following:

#### City Limits

- 20,834 low density residential,
- 2,655 medium/high density residential,
- 6,410,202 square feet of commercial,
- 238 acres of Major Community Facilities,
- 4,272 acres open space recreational uses, and
- 1,676 acres of street rights-of-way

#### Sphere of Influence

- 801 low density residential,
- 273,760 square feet of commercial,
- 28.6 acres of Major Community Facilities, and
- 320 acres of street rights-of-way

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<sup>1</sup> Although the Department of Finance specifies a 28.5 percent vacancy rate for the City of La Quinta, this analysis assumes full occupancy.

<sup>2</sup> SCAG Demographic data information and U.S. Census data 2010.

<sup>3</sup> Project #241A, Residential End Uses of Water, AWWARF, Winter 1999/2000.

<sup>4</sup> SB 7x7 requires that the per capita water demand be reduced by 20%.

### Landscape Water Demand Methodology

Landscape water demand was calculated using the estimated landscape coverage area for residential, commercial, major community facilities, open space, and street rights-of way land uses. For low density residential, 40% landscape coverage is assumed, consisting of 15% moderate desert landscaping and 25% high water demand landscaping. For medium/high density residential 25% landscape coverage is assumed, consisting of 15% moderate desert landscaping and 10% high water demand landscaping. For commercial land uses a 15% moderate desert landscaping coverage is assumed. The major communities facilities land use assumes a total landscape coverage of 30% consisting of 5% for desert landscaping and 25% for high water demanding landscape. It is assumed that natural open space does not generate any water demand. Open space recreation is assumed to generate a water demand for 90% of the total acreage, consisting of 5% moderate desert landscaping and 85% high water demand landscaping. For street right-of-ways 15% landscape area coverage is assumed, with all of it being moderate desert landscaping.

A majority of the existing development within the La Quinta Planning Area is located within Zone 3A. The total projected water demand associated with landscaping is calculated using the MWA factor for moderate desert landscaping or high water demand landscaping such as turf, or water features. The MWA for moderate desert landscaping in Zone 3A is 1,353.97 CCF<sup>5</sup> or 3.108 acre-feet per acre annually. The MWA for turf and other water intensive landscaping in Zone 3A is 1,895.56 CCF or 4.352 acre-feet per acre annually. Existing landscaping within the Planning Area is dominated by turf, with limited desert landscaping.

As shown in Table A-1 through A-3, a total of 25,495 acre-feet per year is required for irrigation of landscaped areas for existing development within City limits, and 1,055 acre-feet within the Sphere of Influence. The total water demand from existing landscaping within the Planning Area is estimated to be 26,550 acre-feet per year.

### Potable Water Demand Methodology

As mentioned above, potable water demand for existing development within the Planning Area was calculated for all indoor uses based on estimates from the American Water Works Association Research Foundation (AWWARF). The AWWARF factor for schools of 16 gpd per square foot is used to estimate the total potable water demand for MC facilities.

For commercial land uses, a factor of 51.22 gallons per day was assumed. This factor is intended to capture the average water demand for all types of commercial uses including retail, office, supermarket, hotel, and restaurants. For analysis purposes it was assumed that existing commercial development within the La Quinta Planning Area consists of 60% retail, 24% office, 8% hotels, and 4% restaurant and supermarkets. Using these percentages and the high range of AWWA end uses of 30.5 gpd, 35 gpd, 115 gpd, 331 gpd, and 52 gpd for retail, office, hotels, restaurant, and supermarkets respectively, it was estimated that the average commercial use factor is 51.22 gpd.<sup>6</sup>

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<sup>5</sup> 1 CCF = 100 cubic feet

<sup>6</sup> Project #241B, Commercial and Industrial End Uses of Water, AWWARF, Summer 2000.

Tables A-4 through A-6 show the estimated potable water demand for existing land uses within the La Quinta General Plan Planning Area, which is estimated to be 5,946 acre-feet per year, consisting of 5,733 acre-feet within City limits and 214 acre-feet within the Sphere of Influence.

#### Total Water Demand

As seen in Tables A-7 through A-9, the total existing water demand within the La Quinta General Plan Planning Area is estimated to be 32,496 acre-feet per year, consisting of 31,228 acre-feet within City limits and 1,268 acre-feet within the Sphere of Influence.

#### **Proposed Water Demand (New Development)**

New development will be constructed using water efficient principles and technologies. Therefore, for all proposed development it is appropriate to utilize demand factors that reflect greater water efficiency to estimate water demand.

#### Landscape Water Demand Methodology

Landscape water demand was calculated using the estimated landscape coverage area for residential, commercial, major community facilities, open space, and street rights-of way land uses. For low density residential, 40% landscape coverage is assumed with 25% consisting of moderate desert landscaping and 15% consisting of high water demand landscaping. For medium/high density residential 25% landscape coverage is assumed with 20% consisting of moderate desert landscaping and 5% consisting of high water demand landscaping. For commercial land uses a 15% moderate desert landscaping coverage is assumed. The major communities facilities land use assumes a total landscape coverage of 25% consisting of 10% for desert landscaping and 15% for high water demanding landscape. It is assumed that natural open space does not generate any water demand. Open space recreation is assumed to generate a water demand for 90% of the total acreage, consisting of 25% moderate desert landscaping and 65% high water demand landscaping. For street right-of-ways 15% landscape area coverage is assumed, with all of it being moderate desert landscaping.

A majority of the proposed development within the La Quinta Planning Area will occur within Zone 4. The total projected water demand associated with landscaping is calculated using the MWA factor for moderate desert landscaping or high water demand landscaping such as turf, or water features. The MWA for moderate desert landscaping in Zone 4 is 1,588.66 CCF<sup>7</sup> or 3.647 acre feet per acre annually. The MWA for turf and other water intensive landscaping in Zone 4 is 2,224.12 CCF or 5.106 acre feet per acre annually. New landscaping within the Planning Area will be predominantly moderate desert landscaping with limited turf areas.

As shown in Tables A-10 through A-12, a total of 4,880 acre-feet per year would be required for irrigation of landscaped areas for proposed developed within City limits, and 11,829 acre-feet within the Sphere of Influence. The total water demand from landscaping activities due to proposed development within the Planning Area is projected to be 16,708 acre-feet per year at build out.

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<sup>7</sup> 1 CCF = 100 cubic feet

#### Potable Water Demand Methodology

As mentioned above, indoor uses are based on estimates from the American Water Works Association Research Foundation (AWWARF). A per capita water demand of 55.44 gallons per day is assumed since it is 20% less than the 69.0 gallon per day considered in the BAU scenario. Square footages for commercial and Major Community (MC) Facilities land uses assume 22% area coverage for buildings. The low range of 8 gpd per square foot for schools is used to estimate the total potable water demand for MC facilities at build out.

For commercial land uses, a factor of 35.5 gallons per day was assumed. This factor is intended to capture the average water demand for all types of commercial uses including retail, office, supermarket, hotel, and restaurants. For analysis purposes it was assumed that existing commercial development within the La Quinta Planning Area consists of 60% retail, 24% office, 8% hotels, and 4% restaurant and supermarkets. Using these percentages and the low range of AWWA end uses of 30.5 gpd, 26 gpd, 60 gpd, 130 gpd, and 24 gpd for retail, office, hotels, restaurant, and supermarkets respectively, it was estimated that the average commercial use factor is 35.5 gpd.

Tables A-13 through A-15 show the estimated potable water demand for new development within the La Quinta General Plan Planning Area, which is estimated to be 5,263 acre-feet per year, consisting of 1,676 acre-feet within City limits and 3,587 acre-feet within the Sphere of Influence.

#### Total Projected Water Demand

The combined water demand for proposed development set forth in the La Quinta General Plan Update considers the use of water for outdoor irrigation of landscaped areas and domestic or indoor water use. Tables A-16 through A-18 summarize the estimated water demand for City limits, the Sphere of Influence, and the overall Planning Area, respectively. Based on the methodology described above, new development within the Planning Area will generate a water demand of 6,555 acre-feet per year for City limits, 15,416 acre-feet per year for the Sphere of Influence, and a combined new water demand of 21,971 acre-feet per year throughout the Planning Area.

#### **Build Out Water Demand**

It is assumed that build out will occur by 2035 and that water demand will increase incrementally over the 25-year build out horizon. Assuming average annual growth, it is estimated that the annual increase in water demand will be approximately 300 acre-feet per year from new growth and development within City limits and 695 acre-feet per year within the Sphere of Influence.

Tables A-19 through A-21 estimate the projected water demand that will be generated from implementation of the proposed General Plan Update. Water demand at build out of the General Plan will come from irrigation of outdoor landscaped areas and indoor water use. Methodologies used to estimate water demand for the proposed land uses described in the La Quinta General Plan Update are described in detail above for existing and proposed land uses. The Build Out Water Demand Tables show the combined total water demand generated by existing and proposed development.

#### Build Out Landscape Water Demand

At build out, the landscaping demand is projected to be 30,374 acre-feet per year for City limits, and 12,884 acre-feet per year for the Sphere of Influence. Therefore, the Planning Area is estimated to generate a total landscaping demand of 43,258 acre-feet per year at build out.

#### Build Out Potable Water Demand

At build out, the potable water demand is projected to be 7,409 acre-feet per year for City limits, and 3,801 acre-feet per year for the Sphere of Influence. Therefore, the Planning Area is estimated to generate a total potable water demand of 11,209 acre-feet per year at build out.

#### Total Projected Water Demand at Build Out

As shown in Table A-21, the combined (existing and proposed) water demand is projected to be 54,467 acre-feet per year at build out of the La Quinta General Plan Planning Area, consisting of 37,783 acre-feet within City Limits, and 16,684 acre-feet within the Sphere of Influence.

### **Business As Usual (Scenario A)**

This water demand scenario uses assumptions that are consistent with the Existing Water Demands as described above under Scenario B and applies these same assumptions to proposed development. Therefore, unlike Scenario B described above, this scenario assumes that new development will not achieve any water conservation compared to existing development. This scenario is provided in order to show the projected water demands that would be realized from all proposed development, should all new development generate the same water demands as existing land uses within the planning area. See the Scenario A tables included herein.

#### Total Projected Water Demand at Build Out

The combined (existing and proposed) water demand under the business as usual scenario is projected to be 57,318 acre-feet per year at build out of the La Quinta General Plan Planning Area, consisting of 38,675 acre-feet within City Limits, and 18,644 acre-feet within the Sphere of Influence.

### **Retrofit and Water Efficiency Scenario C**

This scenario uses assumptions that are consistent with the Proposed Water Demands as described above under Scenario B for new development and applies the same water conservation principals to existing development. Retrofitting activities have the potential to result in substantial water savings within the City of La Quinta and will have minimal effects to the Sphere of Influence. This Scenario assumes that existing development is retrofitted to achieve the same level of water use as new development adhering to water conservation principals. See the Scenario C tables included herein.

#### Total Projected Water Demand at Build Out

The combined (existing and proposed) water demand under the retrofit scenario is projected to be 51,324 acre-feet per year at build out of the La Quinta General Plan Planning Area, consisting of 34,768 acre-feet within City Limits, and 16,556 acre-feet within the Sphere of Influence.



# **APPENDIX A**

## **SCENARIO B: Business As Usual + New Development Efficiency**

### **Water Demand Projections for the La Quinta General Plan**

**Prepared in Support of the  
La Quinta General Plan  
Water Supply Assessment**

Prepared by



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June 22, 2011

**La Quinta General Plan Update - Landscape Water Demand Existing Development City Limits**

<b>Table A-1 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>1</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	4,171.20	15%	625.68	3.108	1,944.79
Low Density Residential (HWD)	4,171.20	25%	1,042.80	4.352	4,537.85
Medium/High Density Residential (MDL)	1,284.00	15%	192.60	3.108	598.66
Medium/High Density Residential (HWD)	1,284.00	10%	128.40	4.352	558.75
<b>Subtotal</b>	<b>5,455.20</b>		<b>1,989.48</b>		<b>7,640.05</b>
Commercial (MDL)	668.90	15%	100.34	3.108	311.87
Major Community Facilities (MDL)	238.00	5%	11.90	3.108	36.99
Major Community Facilities (HWD)	238.00	25%	59.50	4.352	258.92
Open Space- Natural	2,242.70	0%	N/A	N/A	N/A
Open Space- Recreation (MDL)	4,272.00	5%	213.60	3.108	663.93
Open Space- Recreation (HWD)	4,272.00	85%	3,631.20	4.352	15,801.55
Streets, Sidewalks, Medians (MDL)	1,676.10	15%	251.42	3.108	781.47
<b>Subtotal</b>	<b>9,097.70</b>		<b>4,267.95</b>		<b>17,854.73</b>
<b>Total Landscaping Demand</b>	<b>14,552.90</b>		<b>6,257.43</b>		<b>25,494.78</b>

Source: Total acreages are from developed lands under the General Plan Update Land Use Tables, prepared December 27, 2010.

1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 3A is representative of the MWA average for all Zones.

Moderate Desert Landscaping (MDL)	Zone 3A	3.108	ac-ft/ac/yr	1,353.97	CCF
Turf and High Water Demand (HWD)	Zone 3A	4.352	ac-ft/ac/yr	1,895.56	CCF

**La Quinta General Plan Update - Landscape Water Demand Existing Development Sphere of Influence**

<b>Table A-2 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>1</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	551.50	15%	82.73	3.108	257.13
Low Density Residential (HWD)	551.50	25%	137.88	4.352	599.98
Medium/High Density Residential (MDL)	0.20	15%	0.03	3.108	0.09
Medium/High Density Residential (HWD)	0.20	10%	0.02	4.352	0.09
<b>Subtotal</b>	<b>551.70</b>		<b>220.65</b>		<b>857.29</b>
Commercial (MDL)	28.60	15%	4.29	3.108	13.33
Major Community Facilities (MDL)	28.17	5%	1.41	3.108	4.38
Major Community Facilities (HWD)	28.17	25%	7.04	4.352	30.65
Streets, Sidewalks, Medians (MDL)	319.93	15%	47.99	3.108	149.17
<b>Subtotal</b>	<b>376.27</b>		<b>60.73</b>		<b>197.53</b>
<b>Total Landscaping Demand</b>	<b>927.97</b>		<b>281.38</b>		<b>1,054.82</b>

Source: Total acreages are from developed lands under the General Plan Update Land Use Tables, prepared December 27, 2010.

<sup>1</sup> Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 3A is representative of the MWA average for all Zones.

Moderate Desert Landscaping (MDL)	Zone 3A	3.108	ac-ft/ac/yr	1,353.97	CCF
Turf and High Water Demand (HWD)	Zone 3A	4.352	ac-ft/ac/yr	1,895.56	CCF

**La Quinta General Plan Update - Landscape Water Demand Overall Planning Area**

<b>Table A-3 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
City Limits	14,552.90	-	6,257.43	-	25,494.78
Sphere of Influence	927.97	-	281.38	-	1,054.82
<b>Planning Area Total</b>	<b>15,480.87</b>	<b>-</b>	<b>6,538.81</b>	<b>-</b>	<b>26,549.59</b>

**La Quinta General Plan - Potable Water Demand for City Limits**

<b>Table A-4</b> <b>Potable Water Demand for Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day</b>	<b>Total AF/Year</b>
Low Density Residential	2.53	20,834	69.3	4,091.66
Medium/High Density Residential	2.53	2,655	69.3	521.42
<b>Subtotal</b>		23,489		<b>4,613.09</b>
<b>Non-Residential Land Use</b>	<b>Square Feet</b>	<b>Gallons Per Day</b>		<b>Total AF/Year</b>
Commercial	6,410,202	51.22		1,007.61
Major Community Facilities	2,280,802	16		111.99
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>6,410,202</b>	<b>51.22</b>		<b>1,119.60</b>
<b>Potable Water Demand Total</b>				<b>5,732.7</b>

**La Quinta General Plan - Potable Water Demand for Sphere of Influence**

<b>Table A-5</b> <b>Potable Water Demand for Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day</b>	<b>Total AF/Year</b>
Low Density Residential	2.53	801	69.3	157.31
Medium/High Density Residential	2.53		69.3	-
<b>Subtotal</b>		801		<b>157.31</b>
<b>Non-Residential Land Use</b>	<b>Square Feet</b>	<b>Gallons Per Day</b>		<b>Total AF/Year</b>
Commercial	273,760	51.22		43.03
Major Community Facilities	269,959	16		13.26
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>273,760</b>	<b>51.22</b>		<b>56.29</b>
<b>Potable Water Demand Total</b>				<b>213.6</b>

**La Quinta General Plan Update - Potable Water Demand Overall Planning Area**

<b>Table A-6</b> <b>Potable Water Demand</b>				<b>Demand (AF/Y)</b>
City Limits				5,732.69
Sphere of Influence				213.60
<b>Planning Area Total</b>				<b>5,946.28</b>

**Table A-7**  
**La Quinta General Plan**  
**Existing Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	6,482.65	4,091.66	10,574.31	9.44
Medium/High Density Residential	1,157.40	521.42	1,678.83	1.50
Commercial	311.87	1,007.61	1,319.48	1.18
Major Community Facilities	295.91	111.99	407.90	0.36
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	16,465.48	N/A	16,465.48	14.70
Streets, Sidewalks, Medians	781.47	N/A	781.47	0.70
<b>City Limits Total</b>	<b>25,494.78</b>	<b>5,732.69</b>	<b>31,227.46</b>	<b>27.88</b>

**Table A-8**  
**La Quinta General Plan**  
**Existing Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	857.11	157.31	1,014.42	0.91
Medium/High Density Residential	0.18	-	0.18	0.00
Commercial	17.71	43.03	60.74	0.05
Major Community Facilities	30.65	13.26	43.90	0.04
Streets, Sidewalks, Medians	149.17	N/A	149.17	0.13
<b>City Limits Total</b>	<b>1,054.82</b>	<b>213.60</b>	<b>1,268.42</b>	<b>1.13</b>

**Table A-9**  
**La Quinta General Plan**  
**Existing Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	7,339.76	4,248.97	11,588.73	10.35
Medium/High Density Residential	1,157.58	521.42	1,679.01	1.50
Commercial	329.58	1,050.64	1,380.22	1.23
Major Community Facilities	326.56	125.25	451.81	0.40
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	16,465.48	N/A	16,465.48	14.70
Streets, Sidewalks, Medians	930.64	N/A	930.64	0.83
<b>City Limits Total</b>	<b>26,549.59</b>	<b>5,946.28</b>	<b>32,495.88</b>	<b>29.01</b>



<b>La Quinta General Plan Update - Landscape Water Demand Proposed Development City Limits</b>					
<b>Table A-10 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	1,675.90	25%	418.98	3.647	1,528.03
Low Density Residential (HWD)	1,675.90	15%	251.39	5.106	1,283.54
Medium/High Residential (MDL)	350.30	20%	70.06	3.647	255.51
Medium/High Residential (HWD)	350.30	5%	17.52	5.106	89.43
<b>Subtotal</b>	<b>2,026.20</b>		<b>757.94</b>		<b>3,156.51</b>
Commercial (MDL)	337.90	15%	50.69	3.647	184.85
Major Community Facilities (MDL)	160.00	10%	16.00	3.647	58.35
Major Community Facilities (HWD)	160.00	15%	24.00	5.106	122.54
Open Space- Natural	5,233.30	0%	N/A	N/A	N/A
Open Space- Recreation (MDL)	287.50	25%	71.88	3.647	262.13
Open Space- Recreation (HWD)	287.50	65%	186.88	5.106	954.16
Streets, Sidewalks, Medians (MDL)	257.60	15%	38.64	3.647	140.92
<b>Subtotal</b>	<b>6,276.30</b>		<b>388.08</b>		<b>1,722.96</b>
<b>Total Landscaping Demand</b>	<b>8,302.50</b>		<b>1,146.01</b>		<b>4,879.47</b>
Source: Acreages are from the vacant land proposed for development under the General Plan Update Land Use Tables, prepared December 27, 2010.					
1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 4 is representative of the MWA average since most of the new development proposed in the General Plan Update will occur within this Zone.					
Moderate Desert Landscaping (MDL)	Zone 4	3.647	ac-ft/ac/yr	1,588.66	CCF
Turf and High Water Demand (HWD)	Zone 4	5.106	ac-ft/ac/yr	2,224.12	CCF

<b>La Quinta General Plan Update - Landscape Water Demand Proposed Development Sphere of Influence</b>					
<b>Table A-11 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	6,826.60	25%	1,706.65	3.647	6,224.25
Low Density Residential (HWD)	6,826.60	15%	1,023.99	5.106	5,228.37
Medium/High Residential (MDL)	24.40	20%	4.88	3.647	17.80
Medium/High Residential (HWD)	24.40	5%	1.22	5.106	6.23
<b>Subtotal</b>	<b>6,851.00</b>		<b>2,736.74</b>		<b>11,476.65</b>
Commercial (MDL)	320.40	15%	48.06	3.647	175.28
Major Community Facilities (MDL)	1.61	10%	0.16	3.647	0.59
Major Community Facilities (HWD)	1.61	15%	0.24	5.106	1.23
Streets, Sidewalks, Medians (MDL)	319.90	15%	47.99	3.647	175.00
<b>Subtotal</b>	<b>322.01</b>		<b>96.45</b>		<b>352.10</b>
<b>Total Landscaping Demand</b>	<b>7,173.01</b>		<b>2,833.19</b>		<b>11,828.75</b>
Source: Acreages are from the vacant land proposed for development under the General Plan Update Land Use Tables, prepared December 27, 2010.					
1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 4 is representative of the MWA average since most of the new development proposed in the General Plan Update will occur within this Zone.					
Moderate Desert Landscaping (MDL)	Zone 4	3.647	ac-ft/ac/yr	1,588.66	CCF
Turf and High Water Demand (HWD)	Zone 4	5.106	ac-ft/ac/yr	2,224.12	CCF

<b>La Quinta General Plan Update - Landscape Water Demand Overall Planning Area</b>					
<b>Table A-12 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
City Limits	8,302.50	14%	1,146.01	4.26	4,879.47
Sphere of Influence	7,173.01	39%	2,833.19	4.18	11,828.75
<b>Planning Area Total</b>	<b>15,475.51</b>	<b>53%</b>	<b>3,979.20</b>	<b>8.43</b>	<b>16,708.23</b>

<b>La Quinta General Plan - Potable Water Demand for City Limits</b>				
<b>Table A-13 Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day<sup>1</sup></b>	<b>Total AF/Year</b>
Low Density Residential	2.53	5,028	55.44	789.97
Medium/High Density Residential	2.53	3,153	55.44	495.38
<b>Subtotal</b>		<b>8,181</b>		<b>1,285.36</b>
<b>Non-Residential Land Use</b>	<b>Sq.Ft.</b>	<b>Gallons Per Day<sup>1</sup></b>		<b>AF/Year</b>
Commercial	3,238,163	35.5		352.78
Major Community Facilities	1,533,312	8.0		37.64
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>3,238,163</b>	<b>35.5</b>		<b>390.43</b>
<b>Potable Water Demand Total</b>				<b>1,675.8</b>
1 Water use factors are from the American Water Works Association Research Foundation Commercial and Industrial and Residential End Uses of Water, 2000. Assumes water efficient appliances and design and a 20% per capita reduction.				

<b>La Quinta General Plan - Potable Water Demand for Sphere of Influence</b>				
<b>Table A-14 Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day<sup>1</sup></b>	<b>Total AF/Year</b>
Low Density Residential	2.53	20,480	55.44	3,217.71
Medium/High Density Residential	2.53	219	55.44	34.41
<b>Subtotal</b>		<b>20,699</b>		<b>3,252.12</b>
<b>Non-Residential Land Use</b>	<b>Sq.Ft.</b>	<b>Gallons Per Day<sup>1</sup></b>		<b>AF/Year</b>
Commercial	3,070,205	35.5		334.48
Major Community Facilities	15,429	8.0		0.38
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>				<b>334.86</b>
<b>Potable Water Demand Total</b>				<b>3,587.0</b>
1 Water use factors are from the American Water Works Association Research Foundation Commercial and Industrial and Residential End Uses of Water, 2000. Assumes water efficient appliances and design and a 20% per capita reduction.				

<b>La Quinta General Plan Update - Potable Water Demand Overall Planning Area</b>				
<b>Table A-15: Potable Water Demand</b>			<b>Demand (AF/Y)</b>	
City Limits				1,675.78
Sphere of Influence				3,586.98
<b>Planning Area Total</b>				<b>5,262.76</b>

<b>Table A-16</b> <b>La Quinta General Plan</b> <b>Proposed Water Demands for City Limits</b>				
<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	2,811.57	789.97	3,601.54	3.22
Medium/High Density Residential	344.94	495.38	840.33	0.75
Commercial	184.85	352.78	537.63	0.48
Major Community Facilities	180.89	37.64	218.54	0.20
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	1,216.29	N/A	1,216.29	1.09
Streets, Sidewalks, Medians	140.92	N/A	140.92	0.13
<b>City Limits Total</b>	<b>4,879.47</b>	<b>1,675.78</b>	<b>6,555.26</b>	<b>5.85</b>

<b>Table A-17</b> <b>La Quinta General Plan</b> <b>Proposed Water Demands for Sphere of Influence</b>				
<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	11,452.63	3,217.71	14,670.34	13.10
Medium/High Density Residential	24.03	34.41	58.43	0.05
Commercial/Industrial	175.28	334.48	509.76	0.46
Major Community Facilities	1.82	0.38	2.20	0.00
Streets, Sidewalks, Medians	175.00	N/A	175.00	0.16
<b>SOI Total</b>	<b>11,828.75</b>	<b>3,586.98</b>	<b>15,415.74</b>	<b>13.76</b>

<b>Table A-18</b> <b>La Quinta General Plan</b> <b>Proposed Water Demands for Planning Area</b>				
<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	14,264.19	4,007.68	18,271.88	16.31
Medium/High Density Residential	368.97	529.79	898.76	0.80
Commercial/Industrial	360.13	687.27	1,047.40	0.94
Major Community Facilities	182.71	38.02	220.74	0.20
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	1,216.29	N/A	1,216.29	1.09
Streets, Sidewalks, Medians	315.93	N/A	315.93	0.28
<b>City Limits Total</b>	<b>16,708.23</b>	<b>5,262.76</b>	<b>21,970.99</b>	<b>19.61</b>

**Table A-19**  
**La Quinta General Plan**  
**Build Out Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	9,294.22	4,881.63	14,175.85	12.66
Medium/High Density Residential	1,502.34	1,016.81	2,519.15	2.25
Commercial	496.72	1,360.39	1,857.11	1.66
Major Community Facilities	476.80	149.64	626.44	0.56
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	17,681.77	N/A	17,681.77	15.79
Streets, Sidewalks, Medians	922.39	N/A	922.39	0.82
<b>City Limits Total</b>	<b>30,374.25</b>	<b>7,408.47</b>	<b>37,782.72</b>	<b>33.73</b>

**Table A-20**  
**La Quinta General Plan**  
**Build Out Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	12,309.74	3,375.02	15,684.76	14.00
Medium/High Density Residential	24.21	34.41	58.62	0.05
Commercial/Industrial	192.99	377.52	570.51	0.51
Major Community Facilities	32.47	13.63	46.10	0.04
Streets, Sidewalks, Medians	324.17	N/A	324.17	0.29
<b>SOI Limits Total</b>	<b>12,883.57</b>	<b>3,800.58</b>	<b>16,684.15</b>	<b>14.89</b>

**Table A-21**  
**La Quinta General Plan**  
**Build Out Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	21,603.95	8,256.66	29,860.61	26.66
Medium/High Density Residential	1,526.55	1,051.22	2,577.77	2.30
Commercial	689.71	1,737.91	2,427.62	2.17
Major Community Facilities	509.27	163.27	672.54	0.60
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	17,681.77	N/A	17,681.77	15.79
Streets, Sidewalks, Medians	1,246.56	N/A	1,246.56	1.11
<b>Planning Area Total</b>	<b>43,257.82</b>	<b>11,209.05</b>	<b>54,466.87</b>	<b>48.62</b>

# **APPENDIX A**

## **SCENARIO A: Business As Usual**

### **Water Demand Projections for the La Quinta General Plan**

**Prepared in Support of the  
La Quinta General Plan  
Water Supply Assessment**

Prepared by



Terra Nova Planning & Research, Inc.<sup>®</sup>  
42635 Melanie Place, Suite #101  
Palm Desert, CA 92211

June 22, 2011



**La Quinta General Plan Update - Landscape Water Demand Existing Development City Limits**

<b>Table A-1 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>1</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	4,171.20	15%	625.68	3.108	1,944.79
Low Density Residential (HWD)	4,171.20	25%	1,042.80	4.352	4,537.85
Medium/High Density Residential (MDL)	1,284.00	15%	192.60	3.108	598.66
Medium/High Density Residential (HWD)	1,284.00	10%	128.40	4.352	558.75
<b>Subtotal</b>	<b>5,455.20</b>		<b>1,989.48</b>		<b>7,640.05</b>
Commercial (MDL)	668.90	15%	100.34	3.108	311.87
Major Community Facilities (MDL)	238.00	5%	11.90	3.108	36.99
Major Community Facilities (HWD)	238.00	25%	59.50	4.352	258.92
Open Space- Natural	2,242.70	0%	N/A	N/A	N/A
Open Space- Recreation (MDL)	4,272.00	5%	213.60	3.108	663.93
Open Space- Recreation (HWD)	4,272.00	85%	3,631.20	4.352	15,801.55
Streets, Sidewalks, Medians (MDL)	1,676.10	15%	251.42	3.108	781.47
<b>Subtotal</b>	<b>9,097.70</b>		<b>4,267.95</b>		<b>17,854.73</b>
<b>Total Landscaping Demand</b>	<b>14,552.90</b>		<b>6,257.43</b>		<b>25,494.78</b>

Source: Total acreages are from developed lands under the General Plan Update Land Use Tables, prepared December 27, 2010.

1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 3A is representative of the MWA average for all Zones.

Moderate Desert Landscaping (MDL)	Zone 3A	3.108	ac-ft/ac/yr	1,353.97	CCF
Turf and High Water Demand (HWD)	Zone 3A	4.352	ac-ft/ac/yr	1,895.56	CCF

**La Quinta General Plan Update - Landscape Water Demand Existing Development Sphere of Influence**

<b>Table A-2 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>1</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	551.50	15%	82.73	3.108	257.13
Low Density Residential (HWD)	551.50	25%	137.88	4.352	599.98
Medium/High Density Residential (MDL)	0.20	15%	0.03	3.108	0.09
Medium/High Density Residential (HWD)	0.20	10%	0.02	4.352	0.09
<b>Subtotal</b>	<b>551.70</b>		<b>220.65</b>		<b>857.29</b>
Commercial (MDL)	28.60	15%	4.29	3.108	13.33
Major Community Facilities (MDL)	28.17	5%	1.41	3.108	4.38
Major Community Facilities (HWD)	28.17	25%	7.04	4.352	30.65
Streets, Sidewalks, Medians (MDL)	319.93	15%	47.99	3.108	149.17
<b>Subtotal</b>	<b>376.27</b>		<b>60.73</b>		<b>197.53</b>
<b>Total Landscaping Demand</b>	<b>927.97</b>		<b>281.38</b>		<b>1,054.82</b>

Source: Total acreages are from developed lands under the General Plan Update Land Use Tables, prepared December 27, 2010.

<sup>1</sup> Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 3A is representative of the MWA average for all Zones.

Moderate Desert Landscaping (MDL)	Zone 3A	3.108	ac-ft/ac/yr	1,353.97	CCF
Turf and High Water Demand (HWD)	Zone 3A	4.352	ac-ft/ac/yr	1,895.56	CCF

**La Quinta General Plan Update - Landscape Water Demand Overall Planning Area**

<b>Table A-3 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
City Limits	14,552.90	-	6,257.43	-	25,494.78
Sphere of Influence	927.97	-	281.38	-	1,054.82
<b>Planning Area Total</b>	<b>15,480.87</b>	<b>-</b>	<b>6,538.81</b>	<b>-</b>	<b>26,549.59</b>

**La Quinta General Plan - Potable Water Demand for City Limits**

<b>Table A-4</b> <b>Potable Water Demand for Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day</b>	<b>Total AF/Year</b>
Low Density Residential	2.53	20,834	69.3	4,091.66
Medium/High Density Residential	2.53	2,655	69.3	521.42
<b>Subtotal</b>		23,489		<b>4,613.09</b>
<b>Non-Residential Land Use</b>	<b>Square Feet</b>	<b>Gallons Per Day</b>		<b>Total AF/Year</b>
Commercial	6,410,202	51.22		1,007.61
Major Community Facilities	2,280,802	16		111.99
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>6,410,202</b>	<b>51.22</b>		<b>1,119.60</b>
<b>Potable Water Demand Total</b>				<b>5,732.7</b>

**La Quinta General Plan - Potable Water Demand for Sphere of Influence**

<b>Table A-5</b> <b>Potable Water Demand for Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day</b>	<b>Total AF/Year</b>
Low Density Residential	2.53	801	69.3	157.31
Medium/High Density Residential	2.53		69.3	-
<b>Subtotal</b>		801		<b>157.31</b>
<b>Non-Residential Land Use</b>	<b>Square Feet</b>	<b>Gallons Per Day</b>		<b>Total AF/Year</b>
Commercial	273,760	51.22		43.03
Major Community Facilities	269,959	16		13.26
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>273,760</b>	<b>51.22</b>		<b>56.29</b>
<b>Potable Water Demand Total</b>				<b>213.6</b>

**La Quinta General Plan Update - Potable Water Demand Overall Planning Area**

<b>Table A-6</b> <b>Potable Water Demand</b>				<b>Demand (AF/Y)</b>
City Limits				5,732.69
Sphere of Influence				213.60
<b>Planning Area Total</b>				<b>5,946.28</b>

**Table A-7**  
**La Quinta General Plan**  
**Existing Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	6,482.65	4,091.66	10,574.31	9.44
Medium/High Density Residential	1,157.40	521.42	1,678.83	1.50
Commercial	311.87	1,007.61	1,319.48	1.18
Major Community Facilities	295.91	111.99	407.90	0.36
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	16,465.48	N/A	16,465.48	14.70
Streets, Sidewalks, Medians	781.47	N/A	781.47	0.70
<b>City Limits Total</b>	<b>25,494.78</b>	<b>5,732.69</b>	<b>31,227.46</b>	<b>27.88</b>

**Table A-8**  
**La Quinta General Plan**  
**Existing Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	857.11	157.31	1,014.42	0.91
Medium/High Density Residential	0.18	-	0.18	0.00
Commercial	17.71	43.03	60.74	0.05
Major Community Facilities	30.65	13.26	43.90	0.04
Streets, Sidewalks, Medians	149.17	N/A	149.17	0.13
<b>City Limits Total</b>	<b>1,054.82</b>	<b>213.60</b>	<b>1,268.42</b>	<b>1.13</b>

**Table A-9**  
**La Quinta General Plan**  
**Existing Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	7,339.76	4,248.97	11,588.73	10.35
Medium/High Density Residential	1,157.58	521.42	1,679.01	1.50
Commercial	329.58	1,050.64	1,380.22	1.23
Major Community Facilities	326.56	125.25	451.81	0.40
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	16,465.48	N/A	16,465.48	14.70
Streets, Sidewalks, Medians	930.64	N/A	930.64	0.83
<b>City Limits Total</b>	<b>26,549.59</b>	<b>5,946.28</b>	<b>32,495.88</b>	<b>29.01</b>

<b>La Quinta General Plan Update - Landscape Water Demand Proposed Development City Limits</b>					
<b>Table A-10 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	1,675.90	15%	251.39	3.647	916.82
Low Density Residential (HWD)	1,675.90	25%	418.98	5.106	2,139.24
Medium/High Residential (MDL)	350.30	15%	52.55	3.647	191.63
Medium/High Residential (HWD)	350.30	10%	35.03	5.106	178.86
<b>Subtotal</b>	<b>2,026.20</b>		<b>757.94</b>		<b>3,426.55</b>
Commercial (MDL)	337.90	15%	50.69	3.647	184.85
Major Community Facilities (MDL)	160.00	5%	8.00	3.647	29.18
Major Community Facilities (HWD)	160.00	25%	40.00	5.106	204.24
Open Space- Natural	5,233.30	0%	N/A	N/A	N/A
Open Space- Recreation (MDL)	287.50	5%	14.38	3.647	52.43
Open Space- Recreation (HWD)	287.50	85%	244.38	5.106	1,247.75
Streets, Sidewalks, Medians (MDL)	257.60	15%	38.64	3.647	140.92
<b>Subtotal</b>	<b>6,276.30</b>		<b>396.08</b>		<b>1,859.36</b>
<b>Total Landscaping Demand</b>	<b>8,302.50</b>		<b>1,154.01</b>		<b>5,285.91</b>
Source: Acreages are from the vacant land proposed for development under the General Plan Update Land Use Tables, prepared December 27, 2010.					
1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 4 is representative of the MWA average since most of the new development proposed in the General Plan Update will occur within this Zone.					
Moderate Desert Landscaping (MDL)	Zone 4	3.647	ac-ft/ac/yr	1,588.66	CCF
Turf and High Water Demand (HWD)	Zone 4	5.106	ac-ft/ac/yr	2,224.12	CCF

<b>La Quinta General Plan Update - Landscape Water Demand Proposed Development Sphere of Influence</b>					
<b>Table A-11 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	6,826.60	15%	1,023.99	3.647	3,734.55
Low Density Residential (HWD)	6,826.60	25%	1,706.65	5.106	8,713.95
Medium/High Residential (MDL)	24.40	15%	3.66	3.647	13.35
Medium/High Residential (HWD)	24.40	10%	2.44	5.106	12.46
<b>Subtotal</b>	<b>6,851.00</b>		<b>2,736.74</b>		<b>12,474.31</b>
Commercial (MDL)	320.40	15%	48.06	3.647	175.28
Major Community Facilities (MDL)	1.61	5%	0.08	3.647	0.29
Major Community Facilities (HWD)	1.61	25%	0.40	5.106	2.06
Streets, Sidewalks, Medians (MDL)	319.90	15%	47.99	3.647	175.00
<b>Subtotal</b>	<b>322.01</b>		<b>96.53</b>		<b>352.63</b>
<b>Total Landscaping Demand</b>	<b>7,173.01</b>		<b>2,833.27</b>		<b>12,826.94</b>
Source: Acreages are from the vacant land proposed for development under the General Plan Update Land Use Tables, prepared December 27, 2010.					
1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 4 is representative of the MWA average since most of the new development proposed in the General Plan Update will occur within this Zone.					
Moderate Desert Landscaping (MDL)	Zone 4	3.647	ac-ft/ac/yr	1,588.66	CCF
Turf and High Water Demand (HWD)	Zone 4	5.106	ac-ft/ac/yr	2,224.12	CCF

<b>La Quinta General Plan Update - Landscape Water Demand Overall Planning Area</b>					
<b>Table A-12 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
City Limits	8,302.50	14%	1,154.01	4.58	5,285.91
Sphere of Influence	7,173.01	39%	2,833.27	4.53	12,826.94
<b>Planning Area Total</b>	<b>15,475.51</b>	<b>53%</b>	<b>3,987.28</b>	<b>9.11</b>	<b>18,112.85</b>



<b>La Quinta General Plan - Potable Water Demand for City Limits</b>				
<b>Table A-13 Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day<sup>1</sup></b>	<b>Total AF/Year</b>
Low Density Residential	2.53	5,028	69.30	987.47
Medium/High Density Residential	2.53	3,153	69.30	619.23
<b>Subtotal</b>		<b>8,181</b>		<b>1,606.69</b>
<b>Non-Residential Land Use</b>	<b>Sq.Ft.</b>	<b>Gallons Per Day<sup>1</sup></b>		<b>AF/Year</b>
Commercial	3,238,163	51.22		509.00
Major Community Facilities	1,533,312	16.0		75.29
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>3,238,163</b>	<b>51.22</b>		<b>584.29</b>
<b>Potable Water Demand Total</b>				<b>2,191.0</b>
1 Water use factors are from the American Water Works Association Research Foundation Commercial and Industrial and Residential End Uses of Water, 2000. Assumes water efficient appliances and design and a 20% per capita reduction.				

<b>La Quinta General Plan - Potable Water Demand for Sphere of Influence</b>				
<b>Table A-14 Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day<sup>1</sup></b>	<b>Total AF/Year</b>
Low Density Residential	2.53	20,480	69.30	4,022.14
Medium/High Density Residential	2.53	219	69.30	43.01
<b>Subtotal</b>		<b>20,699</b>		<b>4,065.15</b>
<b>Non-Residential Land Use</b>	<b>Sq.Ft.</b>	<b>Gallons Per Day<sup>1</sup></b>		<b>AF/Year</b>
Commercial	3,070,205	51.2		482.60
Major Community Facilities	15,429	16.0		0.76
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>				<b>483.36</b>
<b>Potable Water Demand Total</b>				<b>4,548.5</b>
1 Water use factors are from the American Water Works Association Research Foundation Commercial and Industrial and Residential End Uses of Water, 2000. Assumes water efficient appliances and design and a 20% per capita reduction.				

<b>La Quinta General Plan Update - Potable Water Demand Overall Planning Area</b>				
<b>Table A-15: Potable Water Demand</b>			<b>Demand (AF/Y)</b>	
City Limits				2,190.98
Sphere of Influence				4,548.51
<b>Planning Area Total</b>				<b>6,739.49</b>

**Table A-16**  
**La Quinta General Plan**  
**Proposed Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	3,056.05	987.47	4,043.52	3.61
Medium/High Density Residential	370.49	619.23	989.72	0.88
Commercial	184.85	509.00	693.85	0.62
Major Community Facilities	204.24	75.29	279.52	0.25
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	1,300.18	N/A	1,300.18	1.16
Streets, Sidewalks, Medians	140.92	N/A	140.92	0.13
<b>City Limits Total</b>	<b>5,256.73</b>	<b>2,190.98</b>	<b>7,447.72</b>	<b>6.65</b>

**Table A-17**  
**La Quinta General Plan**  
**Proposed Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	12,448.51	4,022.14	16,470.64	14.70
Medium/High Density Residential	25.81	43.01	68.82	0.06
Commercial/Industrial	175.28	482.60	657.88	0.59
Major Community Facilities	2.06	0.76	2.81	0.00
Streets, Sidewalks, Medians	175.00	N/A	175.00	0.16
<b>SOI Total</b>	<b>12,826.65</b>	<b>4,548.51</b>	<b>17,375.15</b>	<b>15.51</b>

**Table A-18**  
**La Quinta General Plan**  
**Proposed Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	15,504.56	5,009.60	20,514.16	18.31
Medium/High Density Residential	396.30	662.24	1,058.54	0.95
Commercial/Industrial	360.13	991.60	1,351.73	1.21
Major Community Facilities	206.29	76.05	282.34	0.25
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	1,300.18	N/A	1,300.18	1.16
Streets, Sidewalks, Medians	315.93	N/A	315.93	0.28
<b>City Limits Total</b>	<b>18,083.38</b>	<b>6,739.49</b>	<b>24,822.87</b>	<b>22.16</b>

**Table A-19**  
**La Quinta General Plan**  
**Build Out Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	9,538.70	5,079.13	14,617.83	13.05
Medium/High Density Residential	1,527.90	1,140.65	2,668.55	2.38
Commercial	496.72	1,516.61	2,013.33	1.80
Major Community Facilities	500.14	187.28	687.43	0.61
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	17,765.65	N/A	17,765.65	15.86
Streets, Sidewalks, Medians	922.39	N/A	922.39	0.82
<b>City Limits Total</b>	<b>30,751.51</b>	<b>7,923.67</b>	<b>38,675.18</b>	<b>34.53</b>

**Table A-20**  
**La Quinta General Plan**  
**Build Out Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	13,305.62	4,179.45	17,485.07	15.61
Medium/High Density Residential	25.99	43.01	69.00	0.06
Commercial/Industrial	192.99	525.63	718.62	0.64
Major Community Facilities	32.70	14.01	46.72	0.04
Streets, Sidewalks, Medians	324.17	N/A	324.17	0.29
<b>SOI Limits Total</b>	<b>13,881.47</b>	<b>4,762.10</b>	<b>18,643.57</b>	<b>16.64</b>

**Table A-21**  
**La Quinta General Plan**  
**Build Out Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	22,844.32	9,258.58	32,102.89	28.66
Medium/High Density Residential	1,553.88	1,183.66	2,737.55	2.44
Commercial	689.71	2,042.24	2,731.95	2.44
Major Community Facilities	532.85	201.29	734.14	0.66
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	17,765.65	N/A	17,765.65	15.86
Streets, Sidewalks, Medians	1,246.56	N/A	1,246.56	1.11
<b>Planning Area Total</b>	<b>44,632.97</b>	<b>12,685.77</b>	<b>57,318.75</b>	<b>51.17</b>

## **APPENDIX C**

### **SCENARIO C: Retrofit Existing + New Development Efficiency**

#### **Water Demand Projections for the La Quinta General Plan**

**Prepared in Support of the  
La Quinta General Plan  
Water Supply Assessment**

Prepared by



Terra Nova Planning & Research, Inc.<sup>®</sup>  
42635 Melanie Place, Suite #101  
Palm Desert, CA 92211

June 22, 2011

**La Quinta General Plan Update - Landscape Water Demand Existing Development City Limits**

<b>Table A-1 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>1</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	4,171.20	25%	1,042.80	3.108	3,241.32
Low Density Residential (HWD)	4,171.20	15%	625.68	4.352	2,722.71
Medium/High Density Residential (MDL)	1,284.00	20%	256.80	3.108	798.21
Medium/High Density Residential (HWD)	1,284.00	5%	64.20	4.352	279.37
<b>Subtotal</b>	<b>5,455.20</b>		<b>1,989.48</b>		<b>7,041.62</b>
Commercial (MDL)	668.90	15%	100.34	3.108	311.87
Major Community Facilities (MDL)	238.00	10%	23.80	3.108	73.98
Major Community Facilities (HWD)	238.00	15%	35.70	4.352	155.35
Open Space- Natural	2,242.70	0%	N/A	N/A	N/A
Open Space- Recreation (MDL)	4,272.00	25%	1,068.00	3.108	3,319.65
Open Space- Recreation (HWD)	4,272.00	65%	2,776.80	4.352	12,083.53
Streets, Sidewalks, Medians (MDL)	1,676.10	15%	251.42	3.108	781.47
<b>Subtotal</b>	<b>9,097.70</b>		<b>4,256.05</b>		<b>16,725.86</b>
<b>Total Landscaping Demand</b>	<b>14,552.90</b>		<b>6,245.53</b>		<b>23,767.47</b>

Source: Total acreages are from developed lands under the General Plan Update Land Use Tables, prepared December 27, 2010.

1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 3A is representative of the MWA average for all Zones.

Moderate Desert Landscaping (MDL)	Zone 3A	3.108	ac-ft/ac/yr	1,353.97	CCF
Turf and High Water Demand (HWD)	Zone 3A	4.352	ac-ft/ac/yr	1,895.56	CCF

**La Quinta General Plan Update - Landscape Water Demand Existing Development Sphere of Influence**

<b>Table A-2 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>1</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	551.50	25%	137.88	3.108	428.56
Low Density Residential (HWD)	551.50	15%	82.73	4.352	359.99
Medium/High Density Residential (MDL)	0.20	20%	0.04	3.108	0.12
Medium/High Density Residential (HWD)	0.20	5%	0.01	4.352	0.04
<b>Subtotal</b>	<b>551.70</b>		<b>220.65</b>		<b>788.71</b>
Commercial (MDL)	28.60	15%	4.29	3.108	13.33
Major Community Facilities (MDL)	28.17	10%	2.82	3.108	8.76
Major Community Facilities (HWD)	28.17	15%	4.23	4.352	18.39
Streets, Sidewalks, Medians (MDL)	319.93	15%	47.99	3.108	149.17
<b>Subtotal</b>	<b>376.27</b>		<b>59.32</b>		<b>189.64</b>
<b>Total Landscaping Demand</b>	<b>927.97</b>		<b>279.97</b>		<b>978.35</b>

Source: Total acreages are from developed lands under the General Plan Update Land Use Tables, prepared December 27, 2010.

1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 3A is representative of the MWA average for all Zones.

Moderate Desert Landscaping (MDL)	Zone 3A	3.108	ac-ft/ac/yr	1,353.97	CCF
Turf and High Water Demand (HWD)	Zone 3A	4.352	ac-ft/ac/yr	1,895.56	CCF

**La Quinta General Plan Update - Landscape Water Demand Overall Planning Area**

<b>Table A-3 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
City Limits	14,552.90	-	6,245.53	-	23,767.47
Sphere of Influence	927.97	-	279.97	-	978.35
<b>Planning Area Total</b>	<b>15,480.87</b>	-	<b>6,525.50</b>	-	<b>24,745.83</b>



**La Quinta General Plan - Potable Water Demand for City Limits**

<b>Table A-4 Potable Water Demand for Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day</b>	<b>Total AF/Year</b>
Low Density Residential	2.53	20,834	55.4	3,273.33
Medium/High Density Residential	2.53	2,655	55.4	417.14
<b>Subtotal</b>		23,489		<b>3,690.47</b>
<b>Non-Residential Land Use</b>	<b>Square Feet</b>	<b>Gallons Per Day</b>		<b>Total AF/Year</b>
Commercial	6,410,202	35.5		698.36
Major Community Facilities	2,280,802	8		56.00
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>6,410,202</b>	<b>35.5</b>		<b>754.36</b>
<b>Potable Water Demand Total</b>				<b>4,444.8</b>

**La Quinta General Plan - Potable Water Demand for Sphere of Influence**

<b>Table A-5 Potable Water Demand for Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day</b>	<b>Total AF/Year</b>
Low Density Residential	2.53	801	55.4	125.76
Medium/High Density Residential	2.53		55.4	-
<b>Subtotal</b>		801		<b>125.76</b>
<b>Non-Residential Land Use</b>	<b>Square Feet</b>	<b>Gallons Per Day</b>		<b>Total AF/Year</b>
Commercial	273,760	35.5		29.82
Major Community Facilities	269,959	8		6.63
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>273,760</b>	<b>35.5</b>		<b>36.45</b>
<b>Potable Water Demand Total</b>				<b>162.2</b>

**La Quinta General Plan Update - Potable Water Demand Overall Planning Area**

<b>Table A-6 Potable Water Demand</b>				<b>Demand (AF/Y)</b>
City Limits				4,444.83
Sphere of Influence				162.21
<b>Planning Area Total</b>				<b>4,607.04</b>

**Table A-7**  
**La Quinta General Plan**  
**Existing Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	5,964.04	3,273.33	9,237.36	8.25
Medium/High Density Residential	1,077.58	417.14	1,494.72	1.33
Commercial	311.87	698.36	1,010.23	0.90
Major Community Facilities	229.33	56.00	285.33	0.25
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	15,403.19	N/A	15,403.19	13.75
Streets, Sidewalks, Medians	781.47	N/A	781.47	0.70
<b>City Limits Total</b>	<b>23,767.47</b>	<b>4,444.83</b>	<b>28,212.30</b>	<b>25.19</b>

**Table A-8**  
**La Quinta General Plan**  
**Existing Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	788.54	125.76	914.30	0.82
Medium/High Density Residential	0.17	-	0.17	0.00
Commercial	22.09	29.82	51.91	0.05
Major Community Facilities	18.39	6.63	25.02	0.02
Streets, Sidewalks, Medians	149.17	N/A	149.17	0.13
<b>City Limits Total</b>	<b>978.35</b>	<b>162.21</b>	<b>1,140.56</b>	<b>1.02</b>

**Table A-9**  
**La Quinta General Plan**  
**Existing Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	6,752.58	3,399.09	10,151.66	9.06
Medium/High Density Residential	1,077.75	417.14	1,494.89	1.33
Commercial	333.96	728.19	1,062.15	0.95
Major Community Facilities	247.72	62.62	310.34	0.28
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	15,403.19	N/A	15,403.19	13.75
Streets, Sidewalks, Medians	930.64	N/A	930.64	0.83
<b>City Limits Total</b>	<b>24,745.83</b>	<b>4,607.04</b>	<b>29,352.87</b>	<b>26.20</b>

<b>La Quinta General Plan Update - Landscape Water Demand Proposed Development City Limits</b>					
<b>Table A-10 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	1,675.90	25%	418.98	3.647	1,528.03
Low Density Residential (HWD)	1,675.90	15%	251.39	5.106	1,283.54
Medium/High Residential (MDL)	350.30	20%	70.06	3.647	255.51
Medium/High Residential (HWD)	350.30	5%	17.52	5.106	89.43
<b>Subtotal</b>	<b>2,026.20</b>		<b>757.94</b>		<b>3,156.51</b>
Commercial (MDL)	337.90	15%	50.69	3.647	184.85
Major Community Facilities (MDL)	160.00	10%	16.00	3.647	58.35
Major Community Facilities (HWD)	160.00	15%	24.00	5.106	122.54
Open Space- Natural	5,233.30	0%	N/A	N/A	N/A
Open Space- Recreation (MDL)	287.50	25%	71.88	3.647	262.13
Open Space- Recreation (HWD)	287.50	65%	186.88	5.106	954.16
Streets, Sidewalks, Medians (MDL)	257.60	15%	38.64	3.647	140.92
<b>Subtotal</b>	<b>6,276.30</b>		<b>388.08</b>		<b>1,722.96</b>
<b>Total Landscaping Demand</b>	<b>8,302.50</b>		<b>1,146.01</b>		<b>4,879.47</b>
Source: Acreages are from the vacant land proposed for development under the General Plan Update Land Use Tables, prepared December 27, 2010.					
1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 4 is representative of the MWA average since most of the new development proposed in the General Plan Update will occur within this Zone.					
Moderate Desert Landscaping (MDL)	Zone 4	3.647	ac-ft/ac/yr	1,588.66	CCF
Turf and High Water Demand (HWD)	Zone 4	5.106	ac-ft/ac/yr	2,224.12	CCF

<b>La Quinta General Plan Update - Landscape Water Demand Proposed Development Sphere of Influence</b>					
<b>Table A-11 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
Low Density Residential (MDL)	6,826.60	25%	1,706.65	3.647	6,224.25
Low Density Residential (HWD)	6,826.60	15%	1,023.99	5.106	5,228.37
Medium/High Residential (MDL)	24.40	20%	4.88	3.647	17.80
Medium/High Residential (HWD)	24.40	5%	1.22	5.106	6.23
<b>Subtotal</b>	<b>6,851.00</b>		<b>2,736.74</b>		<b>11,476.65</b>
Commercial (MDL)	320.40	15%	48.06	3.647	175.28
Major Community Facilities (MDL)	1.61	10%	0.16	3.647	0.59
Major Community Facilities (HWD)	1.61	15%	0.24	5.106	1.23
Streets, Sidewalks, Medians (MDL)	319.90	15%	47.99	3.647	175.00
<b>Subtotal</b>	<b>322.01</b>		<b>96.45</b>		<b>352.10</b>
<b>Total Landscaping Demand</b>	<b>7,173.01</b>		<b>2,833.19</b>		<b>11,828.75</b>
Source: Acreages are from the vacant land proposed for development under the General Plan Update Land Use Tables, prepared December 27, 2010.					
1 Maximum Water Allowance (MWA) per CVWD's Landscape Ordinance No 1302.1. La Quinta contains all ETo Zones within its Planning Area. In order to capture a reasonable water allowance it was assumed that Zone 4 is representative of the MWA average since most of the new development proposed in the General Plan Update will occur within this Zone.					
Moderate Desert Landscaping (MDL)	Zone 4	3.647	ac-ft/ac/yr	1,588.66	CCF
Turf and High Water Demand (HWD)	Zone 4	5.106	ac-ft/ac/yr	2,224.12	CCF

<b>La Quinta General Plan Update - Landscape Water Demand Overall Planning Area</b>					
<b>Table A-12 Landscape Water Demand</b>	<b>Total Acres</b>	<b>% Landscaped Area</b>	<b>Landscaped Acres</b>	<b>MWA (AF/Y) per Acre<sup>2</sup></b>	<b>Total Demand (AF/Y)</b>
City Limits	8,302.50	14%	1,146.01	4.26	4,879.47
Sphere of Influence	7,173.01	39%	2,833.19	4.18	11,828.75
<b>Planning Area Total</b>	<b>15,475.51</b>	<b>53%</b>	<b>3,979.20</b>	<b>8.43</b>	<b>16,708.23</b>

<b>La Quinta General Plan - Potable Water Demand for City Limits</b>				
<b>Table A-13 Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day<sup>1</sup></b>	<b>Total AF/Year</b>
Low Density Residential	2.53	5,028	55.44	789.97
Medium/High Density Residential	2.53	3,153	55.44	495.38
<b>Subtotal</b>		<b>8,181</b>		<b>1,285.36</b>
<b>Non-Residential Land Use</b>	<b>Sq.Ft.</b>	<b>Gallons Per Day<sup>1</sup></b>		<b>AF/Year</b>
Commercial	3,238,163	35.5		352.78
Major Community Facilities	1,533,312	8.0		37.64
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>	<b>3,238,163</b>	<b>35.5</b>		<b>390.43</b>
<b>Potable Water Demand Total</b>				<b>1,675.8</b>
1 Water use factors are from the American Water Works Association Research Foundation Commercial and Industrial and Residential End Uses of Water, 2000. Assumes water efficient appliances and design and a 20% per capita reduction.				

<b>La Quinta General Plan - Potable Water Demand for Sphere of Influence</b>				
<b>Table A-14 Land Uses</b>	<b>Population /Unit</b>	<b>Number of Units</b>	<b>Gallons Per Day<sup>1</sup></b>	<b>Total AF/Year</b>
Low Density Residential	2.53	20,480	55.44	3,217.71
Medium/High Density Residential	2.53	219	55.44	34.41
<b>Subtotal</b>		<b>20,699</b>		<b>3,252.12</b>
<b>Non-Residential Land Use</b>	<b>Sq.Ft.</b>	<b>Gallons Per Day<sup>1</sup></b>		<b>AF/Year</b>
Commercial	3,070,205	35.5		334.48
Major Community Facilities	15,429	8.0		0.38
Open Space - Natural	N/A	N/A		N/A
Open Space- Recreation	N/A	N/A		N/A
Streets, Sidewalks, Medians	N/A	N/A		N/A
<b>Subtotal</b>				<b>334.86</b>
<b>Potable Water Demand Total</b>				<b>3,587.0</b>
1 Water use factors are from the American Water Works Association Research Foundation Commercial and Industrial and Residential End Uses of Water, 2000. Assumes water efficient appliances and design and a 20% per capita reduction.				

<b>La Quinta General Plan Update - Potable Water Demand Overall Planning Area</b>				
<b>Table A-15: Potable Water Demand</b>			<b>Demand (AF/Y)</b>	
City Limits				1,675.78
Sphere of Influence				3,586.98
<b>Planning Area Total</b>				<b>5,262.76</b>

**Table A-16**  
**La Quinta General Plan**  
**Proposed Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	2,811.57	789.97	3,601.54	3.22
Medium/High Density Residential	344.94	495.38	840.33	0.75
Commercial	184.85	352.78	537.63	0.48
Major Community Facilities	180.89	37.64	218.54	0.20
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	1,216.29	N/A	1,216.29	1.09
Streets, Sidewalks, Medians	140.92	N/A	140.92	0.13
<b>City Limits Total</b>	<b>4,879.47</b>	<b>1,675.78</b>	<b>6,555.26</b>	<b>5.85</b>

**Table A-17**  
**La Quinta General Plan**  
**Proposed Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	11,452.63	3,217.71	14,670.34	13.10
Medium/High Density Residential	24.03	34.41	58.43	0.05
Commercial/Industrial	175.28	334.48	509.76	0.46
Major Community Facilities	1.82	0.38	2.20	0.00
Streets, Sidewalks, Medians	175.00	N/A	175.00	0.16
<b>SOI Total</b>	<b>11,828.75</b>	<b>3,586.98</b>	<b>15,415.74</b>	<b>13.76</b>

**Table A-18**  
**La Quinta General Plan**  
**Proposed Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	14,264.19	4,007.68	18,271.88	16.31
Medium/High Density Residential	368.97	529.79	898.76	0.80
Commercial/Industrial	360.13	687.27	1,047.40	0.94
Major Community Facilities	182.71	38.02	220.74	0.20
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	1,216.29	N/A	1,216.29	1.09
Streets, Sidewalks, Medians	315.93	N/A	315.93	0.28
<b>City Limits Total</b>	<b>16,708.23</b>	<b>5,262.76</b>	<b>21,970.99</b>	<b>19.61</b>



**Table A-19**  
**La Quinta General Plan**  
**Build Out Water Demands for City Limits**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	8,775.60	4,063.30	12,838.91	11.46
Medium/High Density Residential	1,422.52	912.52	2,335.05	2.08
Commercial	496.72	1,051.14	1,547.87	1.38
Major Community Facilities	410.22	93.64	503.86	0.45
Open Space - Natural	N/A	N/A	N/A	N/A
Open Space- Recreation	16,619.48	N/A	16,619.48	14.84
Streets, Sidewalks, Medians	922.39	N/A	922.39	0.82
<b>City Limits Total</b>	<b>28,646.95</b>	<b>6,120.61</b>	<b>34,767.56</b>	<b>31.04</b>

**Table A-20**  
**La Quinta General Plan**  
**Build Out Water Demands for Sphere of Influence**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	12,241.17	3,343.47	15,584.64	13.91
Medium/High Density Residential	24.19	34.41	58.60	0.05
Commercial/Industrial	197.37	364.31	561.68	0.50
Major Community Facilities	20.21	7.01	27.22	0.02
Streets, Sidewalks, Medians	324.17	N/A	324.17	0.29
<b>SOI Limits Total</b>	<b>12,807.11</b>	<b>3,749.19</b>	<b>16,556.30</b>	<b>14.78</b>

**Table A-21**  
**La Quinta General Plan**  
**Build Out Water Demands for Planning Area**

<b>GP Land Use Designations</b>	<b>Landscaping (ac-ft/yr)</b>	<b>Potable (ac-ft/yr)</b>	<b>Total Annual Demand (ac-ft/yr)</b>	<b>Daily Demand (mgd)</b>
Low Density Residential	21,016.77	7,406.77	28,423.54	25.37
Medium/High Density Residential	1,446.72	946.93	2,393.65	2.14
Commercial	694.09	1,415.45	2,109.54	1.88
Major Community Facilities	430.43	100.65	531.08	0.47
Open Space - Natural	N/A	N/A	-	-
Open Space- Recreation	16,619.48	N/A	16,619.48	14.84
Streets, Sidewalks, Medians	1,246.56	N/A	1,246.56	1.11
<b>Planning Area Total</b>	<b>41,454.06</b>	<b>9,869.80</b>	<b>51,323.86</b>	<b>45.82</b>

## **APPENDIX B**

### **Water Resources Litigation and Other Actions: Water Reliability La Quinta General Plan**

**Prepared in Support of the  
La Quinta General Plan  
Water Supply Assessment**

Prepared by



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June 22, 2011

## **Water Resource Litigation and Other Actions**

The following is a summary of pertinent legal actions and other actions that may impact the reliability of water resources from State Water Project.

The availability and reliability of State Water Project (SWP) water from the Sacramento-San Joaquin Delta (Delta) have been affected by numerous legal and regulatory actions over the last several years. These matters have resulted in changes to Delta pumping frequency and duration. Although various legal, regulatory and legislative issues surrounding SWP deliveries have yet to be resolved and could result in further restrictions to SWP operations, or the relaxation of such restrictions, the latest DWR SWP Delivery Reliability Report released August 2010, sets forth delivery projections for short term and long term scenarios including normal, single, multiple dry-year periods.

### Watershed Enforcers v. California Department of Water Resources, et al

In this case, the Department of Water Resources (DWR) was alleged of operating SWP facilities without “take authorization” as defined under the California Endangered Species Act. The case was stayed pending appeal. Due to the stay, the judgment is currently not in effect and DWR has not been required to cease operations of the Banks pumping plant facilities. Moreover, DWR has taken the position that it has incidental take coverage to operate the SWP pursuant to the state and federal Endangered Species Acts. The case remains active for purposes of addressing a discrete legal issue raised by a third party regarding whether or not DWR is the type of entity that is subject to the take prohibitions of the California Endangered Species Act. The Watershed Enforcers case is not expected to result in additional reductions to SWP supplies. Furthermore, the effects of SWP operations on protected fish species in the Delta are being addressed in the separate cases discussed below.

### Delta Smelt and Related Litigation Matters

The delta smelt is a small fish with a typical adult size of 2-3 inches that is found only in the Sacramento-San Joaquin Delta Estuary (Delta). The delta smelt was listed as a threatened species by the U.S. Fish and Wildlife Service (FWS) and by CDFG in 1993. The delta smelt population is affected by many factors such as toxic discharges, invasive and/or predatory species, in-Delta diversions, ocean conditions, Delta exports, and various other contributors.

The US. Fish and Wildlife Services (FWS) released a revised Biological Opinion (BiOp), which addressed the impacts of the SWP and the Central Valley Project (CVP) on delta smelt in 2008. Subsequently, several lawsuits challenging the 2008 BiOp were filed challenging its validity. In December 2010, five lawsuits collectively referred to as the Delta Smelt Cases were consolidated and a decision was issued. The court mandated that the FWS revise the BiOp. The new BiOp is scheduled for release on June 30<sup>th</sup>, 2011.

On February 24, 2011 a settlement was reached between FWS, environmental groups, and urban water users that relaxes pumping restrictions in the Delta as an Interim Remedy through June 30,

2011. The Interim Remedy provides for a 14-day running average of Old and Middle River (OMR) flows between -1,250 cfs and -6,000 cfs, and 5-day running average within 25% of the 14-day average, as adequate flows for protecting the delta smelt. The FWS will set and may modify OMR flows within this range based upon best available science using real time data concerning overall delta smelt distribution, turbidity, salvage, incidental take, temperature and other relevant physical and biological factors. The Stipulation still places pumping restrictions when delta smelt are located near pumping stations.<sup>1,2</sup>

The degree to which SWP deliveries may be reduced under the new BiOp for delta smelt remains difficult to forecast, although DWR and other agencies have estimated potential delivery reductions and are reflected in DWR's 2009 SWP Delivery Reliability Report.

#### Longfin Smelt: California Department of Fish and Game Incidental Take Permit and Related Litigation Matters

On February 29, 2009, CDFG issued an Incidental Take Permit to DWR as the owner and operator of the SWP. The Permit applies to the ongoing and long-term operation of the SWP's facilities in the Delta, including Clifton Court Forebay, the John E. Skinner Fish Facility, the Harvey O. Banks Pumping Plant and the North Bay Aqueduct, and authorizes DWR to incidentally take longfin smelt in connection with its operation of the SWP, provided the terms and conditions of the Permit are satisfied. The Permit imposes operating restrictions on the SWP facilities that are based in large part on the restrictions imposed on the SWP by the new BiOp issued by FWS for delta smelt (see above).

As with the BiOp for delta smelt, potential water supply restrictions under the Permit are dependent on various factors that cannot be predicted with a high degree of certainty, including hydrologic conditions in the Delta region, migratory and reproductive patterns of longfin smelt, and other factors affecting longfin smelt abundance in the Delta. DWR has not indicated whether reductions in SWP exports are likely to result from the Permit.

Due to a number of alleged deficiencies in the Permit, an organization of water agencies holding contracts to receive SWP supplies from DWR has filed a complaint in Sacramento County Superior Court challenging the Permit. (See, e.g., *State Water Contractors v. California Dept. of Fish and Game, et al.*, Sac. Sup. Ct. Case No. 34-2009-80000203.) That case has brought CDFG's ability to enforce the Permit into question. In light of the foregoing factors, potential reductions in SWP supplies resulting from CDFG's Incidental Take Permit for longfin smelt remain speculative at this time.

#### Salmon/Anadromous Species: New National Marine Fisheries Service Biological Opinion and Related Litigation Matters

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<sup>1</sup> "Temporary Settlement Reached in Delta Smelt Case", Association of California Water Agencies, February 25, 2011.

<sup>2</sup> "Stipulation and Proposed Order for Interim Remedy through June 30, 2011", US District Court for the Eastern District of California, February 25, 2011.

An additional factor that has the potential to affect the availability and reliability of SWP supplies is the ongoing litigation and regulatory actions affecting protected anadromous fish species in the Delta, including, winter and spring-run salmon, steelhead trout and green sturgeon. A previous BiOp prepared by the National Marine Fisheries Service (NMFS) was invalidated in 2008,<sup>3</sup> and on June 4, 2009, NMFS issued a new BiOp assessing the effects of CVP and SWP operations on protected salmon, steelhead, green sturgeon, and resident killer whales. Subsequently, legal challenges were filed against the revised BiOp including allegations that the water supply restrictions set forth in the BiOp were established in violation of the Federal Endangered Species Act, the Federal Administrative Procedures Act, and other laws.<sup>4</sup> These cases question whether the water supply restrictions set forth in the BiOp can be imposed against the SWP.

DWR estimated that average year reductions have the potential to be reduced by 10 percent, in addition to restrictions imposed under the FWS BiOp for delta smelt.<sup>5</sup> As with the FWS BiOp for delta smelt and the Incidental Take Permit for longfin smelt, potential water supply restrictions under the NMFS BiOp are dependent on various factors that cannot be predicted with a high degree of certainty, including hydrologic conditions in the Delta region, migratory and reproductive patterns of protected anadromous fish, and other factors affecting the abundance of those species in the Delta. For these reasons, the degree to which SWP deliveries may be reduced under the new NMFS BiOp species remains difficult to forecast, although DWR and other agencies have estimated potential delivery reductions, which are reflected in DWR's 2009 SWP Delivery Reliability Report.

#### California Drought Conditions

In February of 2009, the Governor declared a state of emergency due to the statewide drought conditions, evidenced by the extremely low reservoir storage and estimated snowpack water content at that time. Soon thereafter, a Report to the Governor, prepared in March 2009, set forth the statewide hydrologic conditions, which were somewhat improved from the time the declaration was made. As of March 2009 the larger reservoirs had accumulated an overall average of 82% of their historic average and the statewide snowpack was 87% of average.<sup>6</sup> Recent improvements to California's water supply have reduced drought impacts seen throughout the State in 2007-2009.

On March 16, 2011, DWR increased the 2011 SWP allocation to 70% of contractor's requests. State Water Project allocation will increase from 2,503,276 acre-feet to 2,920,488 due to high snowpack in 2011. The statewide snowpack water content is 129% of average as of March 2011.

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<sup>3</sup> *Pacific Coast Federation of Fishermen's Associations, et al. v. Gutierrez, et al.*, Case No. 1:06-CV-00245-OWW-GSA).

<sup>4</sup> See, e.g., *San Luis & Delta Mendota Water Authority, et al. v. Locke, et al.*, Case No. 1:09-CV-01053-OWW-DLB; *Stockton East Water District v. United States National Oceanic and Atmospheric Administration, et al.*, Case No. 1:09-CV-01090-OWW-DLB; *State Water Contractors v. Locke*, Case No. 1:09-CV-01378 OWW (E.D. Cal); *Kern County Water Agency v. Locke*, Case No. 1:09-CV-01520-OWW (E.D. Cal); *Oakdale Irrigation District v. U. S. Dept. of Commerce*, Case No. 2:09-CV-02452 JAM (E.D. Cal); *The Metropolitan Water District of Southern California v. NMFS, et al.*, Case No. 1:09-CV-01625 SMS (E.D. Cal).

<sup>5</sup> DWR News Release: DWR Responds to New Biological Opinion to Protect Salmon," June 4, 2009.

<sup>6</sup> "California's Drought: Water Conditions & Strategies to Reduce Impacts," prepared by the Department of Water Resources and the Department of Food and Agriculture, Report to the Governor March 30, 2009.

A majority of the State's Reservoirs are also above normal storage levels. For example, Lake Oroville in Northern California is at 113% of normal stage as of March 2011. Lake Oroville is the SWP principal reservoir, and above normal reservoir levels are good news for SWP contractors.<sup>7</sup>

#### 2009 SWP Delivery Reliability Report

The Department of Water Resources released the 2009 State Water Project Delivery Reliability Report, which includes detailed analysis and projections of future SWP deliveries. The revised report takes into consideration all recent and anticipated changes in pumping restriction as a result of litigation since 2009. In addition, the report considers potential changes in the precipitation pattern, rise in sea level, and snowpack accumulation/melting period as a result of global warming. Water delivery impacts to short term and long-term SWP deliveries are quantified and analyzed in the Report.

As discussed above and in the WSA, the 2009 DWR Report is notable in several other key respects. First, similar to the Final 2007 Report, when forecasting the short, intermediate and long-term availability and reliability of SWP exports from the Delta, the 2009 Report expressly incorporates and accounts for the effects of the 2008 FWS Biological Opinion (BiOp) and NMFS BiOp to protect listed fish species in the Delta. Second, the delivery forecasts of the 2009 Report expressly account for the potential effects of global climate change. Third, the 2009 Report utilizes the most conservative assumption that the regulatory restrictions set forth by assuming that the new BiOps will remain in place and that no actions to improve Delta governance and conveyance will occur.

Although DWR utilizes these conservative assumptions, and they are incorporated into the water supply analyses for the Project, it should be noted that various processes and efforts are currently underway pursuant to the Bay Delta Conservation Plan, Delta Vision, and new state laws to improve Delta governance and conveyance systems, all of which are intended to increase the availability and reliability of SWP supplies beyond the regulatory restrictions that have been imposed under the revised FWS BiOp and NMFS BiOp. As discussed above, both BiOps have been legally challenged and require further revisions in order to correct deficiencies and comply with the National Environmental Policy Act.

Thus, the assumptions set forth by DWR in projecting future SWP delivery reliability, and in preparing the WSA, utilize the most stringent approach to ensure a thorough and candid assessment of what may be considered a worst-case scenario for imported SWP supplies.

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<sup>7</sup> "State Water Project Allocation Increases to 70%", prepared by DWR, March 16, 2011.

### Quantification Settlement Agreement Cases and related issues regarding reliability of Colorado River Water Supplies

The availability and reliability of the Metropolitan Water District's (MWD) Colorado River water supplies are discussed in great length and detail in several published documents. For instance, MWD's 2005 Regional Urban Water Management Plan discusses the agency's access to Colorado River water by noting first that several water agencies in California have rights to divert water from the River. Through the 1931 Seven Party Agreement, California's share of Colorado River were assigned to seven agencies, including MWD. Colorado River water is delivered to MWD via the Colorado River Aqueduct (CRA), which has a delivery capacity of 1,800 cubic feet per second, or 1.3 million acre-feet per year. The CRA conveys water 242 miles from the Lake Havasu intake to Lake Mathews, a terminal reservoir near the City of Riverside.

As reported in MWD's Annual Report for the Fiscal Year 2007-2008, MWD has contracts with the federal Bureau of Reclamation for a basic apportionment of 550,000 acre-feet per year and an additional 842,000 acre-feet when available, where MWD may receive surplus water or water unused by Arizona, Nevada or California entities such as the Palo Verde Irrigation District, the Yuma Project Reservation District, the Imperial Irrigation District and the Coachella Valley Water District. According to MWD, the agency conveyed 801,009 acre-feet of CRA water during the fiscal year.

The Annual Report notes that, despite an above-normal spring runoff in 2008, water levels at Lake Mead at the end of the fiscal year were at the lowest level since 1965. In response to those conditions, MWD has aggressively pursued additional supplies from storage and acquisition programs and has instituted other means of stabilizing its Colorado River resources.

As set forth in its Annual Report, MWD took steps to improve water management capability by signing an agreement with other water agencies in the Lower Colorado River Basin in December 2007 which allows some of those agencies to develop and store new water supplies in Lake Mead. The agreement allows MWD to store up to 1.5 million acre-feet in Lake Mead at no additional cost and allows water agencies to cooperate on water conservation projects. In May 2008, MWD also partnered with the Southern Nevada Water Authority and the Central Arizona Water Conservation District to fund the Drop 2 Reservoir Project, which will help conserve water currently lost from the system. Under the program, MWD received an additional 100,000 acre-feet of storage credits in Lake Mead, water that was available for recovery by late 2008.

Additional information and analyses regarding MWD's Colorado River water supplies are set forth in MWD's Appendix A to Preliminary Official Statement dated July 2, 2008, describing MWD's Water Revenue Refunding Bonds, 2008 Series C. According to MWD, the Colorado River was MWD's original source of water after MWD's establishment in 1928. According to MWD, and as indicated above, MWD has a legal entitlement to receive water from the Colorado River under a permanent service contract with the Secretary of the Interior.



Water from the Colorado River or its tributaries is also available to other users in California, as well as users in the states of Arizona, Colorado, Nevada, New Mexico, Utah, and Wyoming (the “Colorado River Basin States”), resulting in both competition and the need for cooperation among these holders of Colorado River entitlements. California is apportioned the use of 4.4 million acre-feet of water from the Colorado River each year plus one-half of any surplus that may be available for use collectively in Arizona, California and Nevada. In addition, as indicated in MWD’s Annual Report, California has historically been allowed to use Colorado River water apportioned to but not used by Arizona and Nevada when such supplies have been requested for use in California. In recent years, however, Arizona and Nevada have increased their use of water from the Colorado River, leaving no unused apportionment available for California.

MWD has taken steps to augment its share of Colorado River water through agreements with other agencies that have rights to use such water. Under a 1988 water conservation agreement (the “1988 Conservation Agreement”) between MWD and the Imperial Irrigation District (IID), IID has constructed and is operating a number of conservation projects that are currently conserving 105,000 acre-feet of water per year. In 2007, the conserved water augmented the amount of water available to MWD by 85,000 acre-feet and, by prior agreement, to the Coachella Valley Water District (CVWD) by 20,000 acre-feet.

In 1992, MWD entered into an agreement with the Central Arizona Water Conservation District (CAWCD) to demonstrate the feasibility of CAWCD storing Colorado River water in central Arizona for the benefit of an entity outside of the State of Arizona. Pursuant to this agreement, CAWCD created 80,909 acre-feet of long-term storage credits that may be recovered by CAWCD for MWD. MWD, the Arizona Water Banking Authority, and CAWCD executed an amended agreement for recovery of these storage credits in December 2007. In 2007, 16,804 acre-feet were recovered. MWD requested that 25,000 acre-feet be recovered in 2008, and expects to request the balance of the storage credits over the next several years. Water recovered by CAWCD under the terms of the 1992 agreement allows CAWCD to reduce its use of Colorado River water, resulting in Arizona having an unused apportionment. The Secretary of the Interior is making this unused apportionment available to MWD under its Colorado River water delivery contract.

As discussed above, in April 2008, MWD’s Board authorized the expenditure of \$28.7 million to join the CAWCD and the Southern Nevada Water Authority (SNWA) in funding the construction of a new 8,000 acre-foot off-stream regulating reservoir near Drop 2 of the All-American Canal in Imperial County. The reservoir will be constructed by the Bureau of Reclamation and is anticipated to be completed in late 2010. The Drop 2 Reservoir is expected to save up to 70,000 acre-feet of water per year by capturing and storing water that would otherwise be lost. In return for its funding, MWD received 100,000 acre-feet of water that is stored in Lake Mead until recovered, with annual delivery of up to 65,000 acre-feet of water from 2011 through 2036. Besides the additional water supply, the new reservoir will add to the flexibility of Colorado River operations.

The October 2003 Quantification Settlement Agreement (QSA) executed by CVWD, IID and MWD is also a core component of MWD's Colorado River water supply arrangement. The QSA establishes Colorado River water use limits for IID, CVWD and MWD, provides for specific acquisitions of conserved water and water supply arrangements for up to 75 years, and restores the opportunity for MWD to receive surplus water under the Interim Surplus Guidelines (see below). The QSA also allows MWD to enter into other cooperative Colorado River supply programs. Related agreements modify existing conservation and cooperative water supply agreements consistent with the QSA, and set aside several disputes among California's Colorado River water agencies.

Specific programs authorized under the QSA include lining portions of the All-American and Coachella Canals, which is projected to conserve 96,200 acre-feet annually with 80,200 acre-feet of conserved water to be delivered to SDCWA by exchange with MWD and 16,000 acre-feet to be delivered to the San Luis Rey Indian tribes by exchange under a water rights settlement; an amendment to the 1988 Conservation Agreement and the associated 1989 Approval Agreement extending the term of the 1988 Conservation Agreement and providing for the transfer of up to 105,000 acre-feet of water conserved by IID to MWD less the amount (up to 20,000 acre-feet of the conserved water) used by CVWD; and the transfer of 200,000 acre-feet of water conserved annually by IID to SDCWA. With full implementation of the programs identified in the QSA, at times when California is limited to its basic apportionment of 4.4 million acre-feet per year, MWD expects to be able to annually divert to its service area 852,000 acre-feet of Colorado River water plus any unused agricultural water that may be available, as was the case in 2004 and 2005. This is further augmented by the PVID program, which provides up to 118,000 acre-feet of water per year. Legal issues having the potential to affect the QSA are further discussed below.

In January 2001, the Secretary of the Interior adopted guidelines (the "Interim Surplus Guidelines") for use through 2016 in determining if there is surplus Colorado River water available for use in California, Arizona and Nevada. The purpose of the Interim Surplus Guidelines is to provide a greater degree of predictability with respect to the availability and quantity of surplus water through 2016. The Interim Surplus Guidelines were later extended through 2026.

The Interim Surplus Guidelines contain a series of benchmarks for reductions in agricultural use of Colorado River water within California by set dates. Under the Interim Surplus Guidelines, MWD initially expected to divert up to 1.25 million acre-feet of Colorado River water annually under foreseeable runoff and reservoir storage scenarios from 2004 through 2016. An extended drought in the Colorado River Basin initially reduced these expectations. From 2000 to 2004, snow pack and runoff in the Colorado River Basin were below average. Although runoff was slightly above average in 2005, the runoff in 2006 and 2007 was again below average, making 2000 through 2007 the driest eight-year period on record. Above-average precipitation occurred in 2008, however, producing April through June inflows into Lake Powell that measured 144 percent of inflows for the same period in 2007.

In February 2007, the Bureau of Reclamation issued a Draft Environmental Impact Statement (EIS) regarding new federal guidelines concerning the operation of the Colorado River system reservoirs. These new guidelines provide water release criteria from Lake Powell and water storage and water release criteria from Lake Mead during shortage and surplus conditions in the Lower Basin, provide a mechanism for the storage and delivery of conserved system and non-system water in Lake Mead and extend the Interim Surplus Guidelines through 2026. The Bureau of Reclamation released the Final EIS in November 2007, and the Secretary of the Interior issued the final guidelines through a Record of Decision signed in December 2007. The Record of Decision and accompanying agreement among the Colorado River Basin States protect reservoir levels by reducing deliveries during drought periods, encourage agencies to develop conservation programs and allow the states to develop and store new water supplies. The Colorado River Basin Project Act of 1968 insulates California from shortages in all but the most extreme hydrologic conditions.

In addition, on May 26, 2006, MWD and the Bureau of Reclamation executed an agreement for a demonstration program that allows MWD to leave conserved water that MWD would otherwise use in Lake Mead in 2006 and 2007. Only intentionally-created surplus water (water that has been conserved through an extraordinary conservation measure, such as land fallowing) was eligible for storage in Lake Mead under this program. MWD may store additional intentionally-created surplus water in Lake Mead under the federal guidelines for operation of the Colorado River system reservoirs described above. The Secretary of the Interior will deliver intentionally created surplus water to MWD in accordance with the terms of a December 13, 2007 Delivery Agreement between the United States and MWD.

As indicated above, the QSA has been subject to litigation. In the *Coordinated QSA Cases* (Sacramento County Superior Court, Judicial Council Coordination Proceeding No. 4353), several legal actions were filed after the QSA was adopted in 2003. Those cases were coordinated and stayed for over two years beginning in 2004 while a procedural issue in two of the cases was determined by the Court of Appeal. The cases became active again in late 2007.

In January 2010, the Sacramento County Superior Court ruled that the QSA's funding mechanism for Salton Sea mitigation efforts exceeded the debt limitation requirements under State law. For several reasons, however, it is not certain that this decision will have any affect the availability and reliability of MWD's Colorado River supplies. For instance, independent of the QSA, MWD holds senior rights to the Colorado River and other Colorado River supplies. Moreover, the U.S. Department of the Interior determines deliveries from the Colorado River and the Department is not a party to the case and thus not bound by the ruling. Beyond that, it is possible that action will be taken to correct the funding mechanism such that it comports with applicable requirements. Finally, the effect of the ruling has been stayed by the Court of Appeal, allowing the QSA to be implemented unless otherwise directed by the courts. For these and other reasons, it remains speculative as to whether and to what degree, if any, the QSA litigation will affect the amount of Colorado River water delivered to MWD by the Department of the Interior.